

## Chicago Cafes Lead In Use of Cooling

(Concluded from Page 1, Column 1) reported compared with 68 during the month last year, an increase of 22%. Capacity of June installations increased 84% over last year, totaling 1,591 against 864 in 1936.

Restaurants led the field in installations during the half year, 82 such jobs being recorded during the period. General office installations were next, with 39, and private offices third with 35. Theaters comprised the next largest group, with 31 installations.

Progress in the residential air-conditioning field is indicated by the fact that 30 homes were air conditioned in the first six months of 1937, compared with but 12 in the same period last year.

Largest of the jobs contracted for during June was a 500-ton system in the LaSalle St. station of the New York Central railroad. Other installations exceeding 100 tons were in the North American building, where a 175-ton job was put in service; and the general offices of Household Finance Co., where a 120-ton job was installed.

Types of businesses, which contracted for air-conditioning installations in the first six months of 1937 follow:

### CLASSIFICATIONS FOR 6 MOS.

Restaurants	82
General Offices	39
Private Offices	35
Theaters	31
Residences	30
Shoe Stores	21
Drug Stores	14
Clothing and Department Stores	14
Miscellaneous Stores	13
Doctors and Dentists	12
Industrial Plants	11
Funeral Parlors	9
Candy Stores	6
Beauty Parlors	5
Fur Stores	5
Clubs	3
Hotels	3
Food Stores	2
Studios	2
Hospitals	1
Brokers and Exchanges	1
Barber Shops	1
Amusements	1

The following tabulation shows the classification and number of air-conditioning installations in June:

### CLASSIFICATIONS FOR JUNE

Restaurants	17
Private Offices	13
Residences	11
General Offices	7
Miscellaneous Stores	6
Clothing and Department Stores	6
Doctors and Dentists	5
Shoe Stores	3
Candy Stores	3
Beauty Parlors	3
Industrial Plants	2
Studios	2
Drug Stores	2
Theaters	1
Funeral Parlors	1
Barber Shops	1

Number of air-conditioning plants installed or contracted for in Chicago at the end of June was 1,697.

## Carrier to Concentrate Its Manufacturing In Syracuse

(Concluded from Page 1, Column 3)

Carrier for \$1,000 with an arrangement under which the city and its chamber of commerce will pay part of the moving costs from Newark. Syracuse is said to be cancelling about \$600,000 in back taxes against the property.

It is understood that the tax and other concessions are made by Syracuse in return for a commitment from Carrier to concentrate 80% of its operation there within the next 12 months, and in case of failure to do so to reconvey the property prior to July 1, 1939. If the major portion of operations are removed from Syracuse before July 1, 1942, reconveyance plus one-half the cost of fixed improvements is required.

The Franklin plant consists of a dozen buildings of from four to six stories and contains 1,400,000 sq. ft. of floor space. For moving Carrier from Newark to its new home, it is reported that the Syracuse Chamber of Commerce has raised more than \$250,000, some of which will go into improvements in the Franklin plant.

## Inland Eastern Plant To Employ 200 to 300 Persons

(Concluded from Page 1, Column 3)

plant of the main manufacturing operations in Dayton, the new plant will stock Inland Dayton-manufactured parts for shipment to car assembly plants, Mr. Whittaker said.

Manufacturing activity will be confined to the making of part of the eastern requirements of a few of the company's products on which considerable savings in transportation costs can be accomplished.

The plant will have about one-seventh the area of the Inland Dayton plant, and what manufacturing activity is moved from here to the East will make way for increased production of present Inland products.

Between 200 and 300 persons will be employed in the eastern plant, Mr. Whittaker said, compared to the average of 3,100 persons now working in the present Inland plant here. Construction is expected to be completed within 90 days of the letting of bids, which will be asked for during the next few weeks.

Establishment of the eastern service plant is the second major expansion of Inland to be announced within the past few months. In April, the company began construction of a block-square addition to its plant to increase manufacturing facilities by more than 80,000 sq. ft.

## Anti-Utility Sales Law Beaten in Connecticut

(Concluded from Page 1, Column 2) strong opposition every time it was brought up.

Principal objection to the bill seemed to be that, if enacted, it would be an obstacle to rate reductions because it would slow down the advance of home service and the consequent increase in current consumption, which makes lower rates possible.

Committee members opposed to the bill also charged that it would impair servicing, retard the introduction of new appliances, pave the way for inferior merchandise, imperil dealer markets, and cause unemployment.

## Crosby Heads Crosley Radio Division

CINCINNATI — Don Crosby has been appointed manager of the radio division of Crosley Radio Corp., announces Thomas W. Berger, general sales manager of the company.

The appointment of Mr. Crosby to this newly created position, Mr. Berger stated, is designed to add to the efficiency of the Crosley marketing organization and to keep the merchandising program abreast of the company's policy of increasingly diversifying its line of household appliances.

For eight years Mr. Crosby served the Crosley Radio Corp. as district manager in western, mid-western and eastern territories.

## Bendix to Introduce Appliance Line

(Concluded from Page 1, Column 2)

Brooke, Smith, & French, Inc., Detroit, has been appointed to handle the Bendix advertising and merchandising. A national campaign to launch the new product, which will be marketed through a distributor organization, is planned.

Smart styling and simplicity of design characterize the new Bendix Home Laundry which was designed for installation in the kitchen or first-floor utility room.

The unit is said to be radically different in construction and operation, and will probably have a retail price of \$169.50.

Housed in a white deluxe cabinet with a black base, the laundry unit is approximately 36 inches high, 20½ inches deep, and 24½ inches wide. Clothes are put into the machine through a round glass door in the front panel of the cabinet.

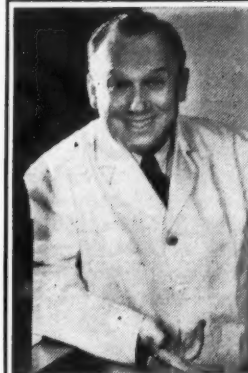
## Florida Distributors to Fight Price-Cutting

MIAMI, Fla.—In an attempt to eliminate the practice of price-cutting in electrical appliances by dealers who allow special commissions and bonuses to architects, builders and others, the South Florida Distributors' Association has been formed here, with J. R. Meehan as chairman.

Several dealers have been forced to relinquish their franchises because of price-cutting activities, the association claims.

## T. F. Chalkiadi Joins New Haven Dealer

BLOOMFIELD, N. J.—T. F. Chalkiadi, who for three and a half years has been associated with dealer promotional activities of the General Electric air-conditioning department here, has left the company to manage the New Haven outlet of the Automatic Appliance Co., Inc.



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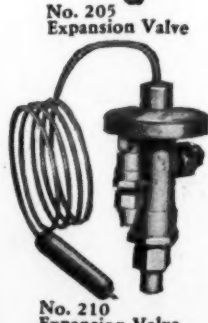
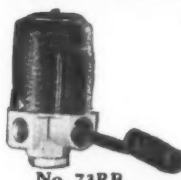
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*It didn't and it couldn't.*

A-P Thermostatic Expansion Valves may be installed in any position or in any temperature even though higher or lower than the bulb. An installation convenience that every service man will appreciate.

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# REFRIGERATION NEWS

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## Household Sales Total 359,000 Units in May

14,800 Higher than Month  
Last Year; Commercial  
Sales Are 34,980

DETROIT—Continuing to decline somewhat from the all-time record set in March, world manufacturer-to-distributor sales of household electric refrigerators dropped to a total of 359,000 units for the month of May, according to estimates of AIR CONDITIONING AND REFRIGERATION NEWS.

This mark exceeds that of May, 1936, by 14,800 units, although it is 4,570 units below April sales this year, and 21,100 units down from the all-time record of 380,100 established in March.

Far sharper decline was shown in commercial refrigeration sales to distributors during May, as reported by members of the commercial section of National Electrical Manufacturers Association, which fell off to 34,980 units, or more than 10,000 units below the all-time monthly high of 45,623 units set in April.

May commercial sales this year lagged 633 units behind those of May 1936. Last year's May figure of 35,613 was a new monthly high at that time.

Household sales reported for May by 15 Nema member companies totaled 333,869 units, of which all but 19,261 were sold in the United States or Canada.

Commercial equipment sales for May included 1,635 self-contained air conditioners, 6,631 bottled beverage coolers, 4,403 complete ice cream cabinets, and 3,763 pressure water coolers.

May household sales exceeded 20,000 units in five different states. New York retained its leading pace with 33,390 units, while Pennsylvania still threatened New York's supremacy with a total of 29,489 units. In third, fourth, and fifth place were Illinois with 27,425 units, Ohio with 23,952, and California with 20,288.

## 7 New Distributors Named by F-M

INDIANAPOLIS—Appointment of three distributors to handle the complete line of Fairbanks-Morse refrigerators, radios, and home laundry equipment, and of four new distributors for F-M radios, has been made by W. Paul Jones, general manager of Fairbanks-Morse's home appliance division.

New distributors of the complete appliance line are: Brown-Camp Hardware Co., Des Moines, distributor for Des Moines and 79 Iowa counties; Motor Hardware & Equipment Co., San Diego, Calif., San Diego and Imperial counties; and Saginaw Distributing Co., Saginaw, Mich., northeastern Michigan.

Appointed to distribute F-M radios were: O. S. Stapley Co., Phoenix, Ariz.; Radio Electric Service Co., Baltimore; C & B Distributing Co., Peoria, Ill.; and C. M. McClung & Co., Knoxville, Tenn., also distributor of the complete Fairbanks-Morse line.

## Sunbeam Departments Resume Operation

EVANSVILLE, Ind.—Closed since June 19 when steel strikes caused a lack of materials, the machine, metal finishing, paint, and assembly departments of the Sunbeam Electric Mfg. Co., manufacturer of Coldspot electric refrigerators, were to reopen this week. The shutdown affected 300 workers.

## ACMA 5-Month Sales Total \$50,131,360

WASHINGTON, D. C.—Installed cost of equipment sold by members of Air Conditioning Manufacturers' Association during the first five months of 1937 exceeded the total for all of 1936, reports William B. Henderson, executive vice president.

This year's five months total is \$50,131,360, as compared with \$49,942,301 during all of last year, Mr. Henderson stated.

Every month reported this year has broken all records of previous years. May's total was \$8,820,059, an increase of 43.2% over the same month in 1936.

The month fell below April's \$9,663,009, but represents record new installation of small units, Mr. Henderson said, as summer attention is centered on home and office comfort cooling with room-size equipment.

## Only Iced Drinks Are Cooling According to Ruling By Federal Liquor Czar

WASHINGTON, D. C.—Advertising copy which "creates the impression" that distilled spirits in themselves will have a cooling effect on the consumer is in violation of Administration regulations on labeling and advertising, according to a recent ruling on the subject made by W. S. Alexander, Federal Alcohol Administrator.

He made the proviso, however, that liquor advertisements which say, or imply, that certain iced drinks such as a Tom Collins or mint julep are cooling and refreshing, will meet no official objection if they make clear that the statement or implications apply to the mixed drink, rather than to the distilled spirits used in its preparation.

## 48 Cooling Systems for Houston in June

HOUSTON, Tex.—Sale of 48 air-conditioning systems here during June has been reported by Houston Light & Power Co.

While this figure shows a slight unit advance over the 43 installations made in May, total tonnage of June sales was only 205.97 compared to 318.6 for systems installed during May.

A 25-ton Carrier system for American Can Co. was the largest single sale recorded. A 22-ton Frigidaire job was sold to Foley Bros., and a 20-ton York system to D. F. Peyton Co.

Carrier Corp. led in number of systems installed with a total of 12, compared to 11 for York and nine for Frigidaire.

A tabulation of the month's installations, giving make, tonnage, and horsepower of each job, will be found on page 2 of this issue.

## Landers, Frary & Clark Planning Addition

NEW BRITAIN, Conn.—To provide increased space for the production of electric refrigerators and washing machines, Landers, Frary & Clark plans to build a five-story addition to the heavy appliance division of its plant, costing between \$150,000 and \$175,000.

Of brick and steel construction, and approximately 80 x 102 feet in size, the addition will be erected on the north side of Ellis St. and will be connected to the existing factory section by a two-story bridge across Ellis St.

## Universal Cooler Submits Plan on Option to Nash

Stockholders Vote on Plan  
Which Would Cut  
Purchase in Half

DETROIT—Stockholders of Universal Cooler Corp. will meet July 29 for a vote on terms of settlement of the law suit brought by some minority stockholders against the company to restrain the issuance of shares of stock to Kelvinator division of Nash-Kelvinator Corp. under an option which Kelvinator sought to exercise last Oct. 10.

Under terms of the proposed settlement, Kelvinator would buy only about half of the stock covered by its option. In addition, Kelvinator has agreed to waive the 1936 dividend amounting to \$45,000 on the stock it would purchase.

According to the proposed plan, Kelvinator would buy 100,000 of the 223,614 Universal Cooler "B" shares covered by its option, and 35,000 of the 68,822 Universal Cooler "A" shares covered by its option, paying \$255,750 for the stock.

Universal Cooler now has outstanding 66,178 Class "A" shares and 206,386 shares of Class "B" stock. If Kelvinator had been allowed to purchase stock to the full extent of its option, it would have gained a majority of the stock and the controlling interest in the company. Under terms of the proposed settlement this would not take place.

Universal Cooler agrees under the plan to pay the cost of the protective committee and its counsel, and the fees of its own counsel in an amount not to exceed \$35,000, if stockholders approve the settlement.

Last fall an order issued by the Wayne County (Michigan) Circuit Court restrained J. B. Ford, Jr., a company director, from exercising options which ran to him, but the principal portions of which were assigned to Kelvinator.

At the time of the court action last fall the following explanation for the assignment of the options was offered by Universal Cooler Corp.

Universal Cooler Corp., late in 1933, had an opportunity to get the contract for the manufacture of refrigerators for Montgomery Ward & Co., but found it necessary to

(Concluded on Page 2, Column 3)

## Federal Trade Commission Tells Coolerator To Stop Unfair Tactics

Exhibit Space Fills  
For Chicago Show

CHICAGO—Reservations for manufacturers' exhibits at the fourth annual convention and exhibit of the Refrigeration Service Engineers' Society, to be held in the Stevens hotel here Nov. 3, 4, and 5, now total 81% of the available space, according to a statement issued from the association's headquarters.

Exhibitors who have reserved booths are: Alco Valve Co., St. Louis; Commercial Coil & Refrigerating Co., Chicago; Penn Electric Switch Co., Des Moines; Rotary Seal Co., Chicago; Art Valve Co., Chicago; R. & H. Chemicals Dept., Wilmington, Del.; Mueller Brass Co., Port Huron, Mich.; Peerless of America, Inc., Chicago; Mario Coil Co., St. Louis.

Airo Supply Co., Chicago; James P. Marsh Corp., Chicago; South Bend Lathe Works, South Bend, Ind.; Henry Valve Co., Chicago; Automatic Heating & Cooling Supply Co., Chicago; Chicago Wilcox Co., Chicago; L. H. Gilmer Co., Philadelphia; Herman Goldberg Co., Chicago; Ranco, Inc., Columbus, Ohio; Kellogg Compressor & Mfg. Co., Rochester, N. Y.; Snap-On Tools, Inc., Kenosha.

(Concluded on Page 15, Column 3)

## Wisconsin Ruling Says Plumber Can't Install

MILWAUKEE—The state board of health has intervened to settle a jurisdictional dispute between plumbers and steamfitters on installations of air-conditioning and refrigeration equipment. The question, "Where does plumbing end and steamfitting begin?" has been argued by union members of both crafts and contractors before the common council's utilities and health committee many times.

The board's ruling gives licensed plumbers jurisdiction over water piping up to the point where the appliance, whether air conditioning, refrigeration, a boiler, or heating system, is to be installed, from which point it is the steamfitter's work.

The committee delayed adoption of the ruling as a part of the water department code for two weeks to give parties concerned another opportunity to be heard.

## Ruling Says Claims About Mechanical Units Are False & Misleading

WASHINGTON, D. C.—The Coolerator Co., Duluth, Minn., ice box manufacturer, has been ordered by the Federal Trade Commission to cease and desist from unfairly disparaging mechanical or electric refrigerators to promote the sales of its ice-cooled boxes, in an order made public July 18.

The commission, following its investigation, found that certain representations made by Coolerator in its advertising matter were either "false, misleading, or insufficiently qualified, and have had a tendency to mislead the public into the erroneous belief that mechanical refrigerators are undesirable and ineffective in use and harmful and dangerous to users."

The commission's order prohibits representations as to the deleterious effects that may result to foods kept in mechanical refrigerators. Representations ordered discontinued include the following:

"That 45 to 50° F. is the established or required standard temperature necessary in all types of refrigerators for the most satisfactory preservation of food."

"That the various gases used in mechanical refrigerators have a deleterious effect on, and taint, food."

"That foods kept in mechanical refrigerators lose water or dehydrate to such an extent that their nutritive properties are impaired and essential parts of the chemical combination of various foods in their natural state are destroyed, while foods kept in a non-mechanical refrigerator do not dehydrate or lose water to any extent whatever."

"That poisonous or other gases are formed in such quantities from the decay of foods stored in mechanical refrigerators that they have a harmful effect in tainting such goods and in reducing their nutritive value."

"That in a non-mechanical refrigerator such poisonous or other gases as may be formed from the decay of foods are entirely absorbed by water from the melting ice and are carried away through the drain pipe, but that in mechanical refrigerators such gases resulting from decaying foods remain in the ice cubes."

"The Coolerator Co. is not prohibited by the order from representing that a maintained temperature of 50° F., or lower, is generally satisfactory for the preservation of foods."

## FOUR HEARINGS HELD

On April 22, 1936 the Federal Trade Commission made public its complaint against the Coolerator Co., Duluth manufacturer of ice refrigerators, charging that representations made by the Coolerator Co. in a booklet titled "Why Ice Is Best for Refrigeration," constituted unfair competition.

According to the complaint, the booklet suggested that various gases used in electric refrigerators escape from the coils, permeate the food chamber, and have a deleterious effect on food; that food kept in electric refrigerators dehydrates to such an extent that the nutritive properties are impaired, and other similar assertions.

First hearing on the case was held in the Chicago offices of the FTC, and was conducted under Trial Examiner J. J. Keenan, with J. T. Welch acting as FTC trial attorney.

At this hearing, reported in the July 8, 1936 issue of the NEWS, two noted bacteriologists—Dr. Alexander A. Day, head of the department of bacteriology at Northwestern University; and Dr. Gail M. Dack, professor of medical bacteriology at the University of Chicago, concurred in their testimony that the booklet's

(Concluded on Page 2, Column 1)

## New Robot Entertains Prospects



Wired for sound, the new "Hill Billy Ambassador" sings, plays, and emphasizes the merits of General Electric appliances. Like Willie Vocalite of Westinghouse, this robot will probably see a lot of the country.

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## Resume of Testimony Given At Federal Trade Hearings on Coolerator Complaint

(Concluded from Page 1, Column 5) contention that a temperature of from 45 to 50° F. is best for refrigeration, was false.

The doctors' testimony also discredited other assertions made in the booklet regarding dehydration of foods in an electric refrigerator, and the deleterious effect it would have on foods in an electric refrigerator, that ice cubes contain the same gelatinous matter found in the drain pipe of an ice refrigerator, and other statements contained in the booklet.

Other testimony given by electric refrigerator manufacturers' representatives at this hearing established the fact that dealer sales had been hurt by the distribution of the Coolerator booklet.

Three commercial engineers from electric refrigerator manufacturing companies explained the operation, construction, and assembly of electric boxes, and the nature, content, and safety features of refrigerators used in the boxes.

Two Coolerator executives, William F. Arndt, president, and John H. Ganzer, vice president in charge of sales and advertising, furnished background information on their company and on the origin of the booklet "Why Ice is Best for Refrigeration," at the second trial hearing held the following week in Duluth, Minn.

AIR CONDITIONING AND REFRIGERATION NEWS reported the Chicago hearing in its July 8 issue, and the Duluth hearing on July 15.

Chief witnesses to testify at the third hearing of the case held in Detroit, July 13, 14, and 15, 1936, and reported in the July 15 and 22 issues of the NEWS, were Dr. L. A. Philipp, head of Kelvinator's research laboratories, and Dr. Wloyd W. Robison, consulting chemist and bacteriologist.

Among the salient facts established in Dr. Philipp's testimony, which was based on data from tests he had made, was that the claims made in the booklet that there is excessive dehydration in electric refrigerators as compared to ice boxes were not grounded on scientific fact.

Dr. Philipp also reported on tests made in Kelvinator's laboratories which showed that temperatures maintained in ice boxes were over 50° F., while the electric refrigerators kept temperatures lower than 45° even under extreme conditions.

Claiming that the temperatures nearest to freezing, or 32°, are the best refrigerator temperatures, Dr. Floyd W. Robison, second witness in the Detroit hearing, denied the truth of the booklet's statement that the best temperature for the pres-

ervation of food is between 45° and 50°.

Most of Dr. Robison's testimony was based on his observations in experiments conducted with a Coolerator ice box, and General Electric and Norge electric refrigerators.

Several assertions in the Coolerator booklet were declared untrue by Dr. Robison in his testimony, among them: that gases from the electric refrigerator are harmful to food, that the moisture content of the air is sapped up by an electric refrigerator, that water cannot be put back into foods, and that ice cubes contain the same matter as found in the drain pipe of an ice box.

Next hearing of the case was held in Dayton July 17-18, and was reported in the NEWS of July 22. Most of the testimony given at this hearing was concerned with tests made by Frigidaire engineering research department on a Coolerator refrigerator, to determine how temperatures and humidities in such a refrigerator compared with those in a Frigidaire.

Frigidaire's chief engineer, Edwin B. Newill performed some experiments demonstrating the safety of F-114, the refrigerant used in most Frigidaire models.

## Details of Universal Cooler-Kelvinator Agreement

(Concluded from Page 1, Column 3) obtain additional working capital in order to secure the contract.

Kelvinator declared itself willing to make a term loan of \$250,000 for three years, to help Universal Cooler obtain the Montgomery Ward order, on two conditions:

1. That it be given a sufficient amount of the company's unissued stock which, if accepted, would constitute a technical majority of the issued stock of the corporation of each class then authorized.

2. That the identity of Kelvinator as a party to the transaction not be disclosed until such time as Kelvinator itself should elect to take some definite position as to whether or not it wished to avail itself of the option.

Universal Cooler Corp. officers and directors, according to the answer they made to the suit, believed that the assistance of Kelvinator Corp. was essential to the continued successful operation of the corporation, and that it was their duty to obtain this assistance.

To meet the condition that the identity of Kelvinator in the transaction remain undisclosed, it was arranged that the option be taken by J. B. Ford, Jr., a shareholder and director of Universal Cooler.

## New Kelvinator Dealership

SALT LAKE CITY — Handling Kelvinator refrigerators and appliances and Easy washing machines, a new dealership, the Kenneth Smith Co., was opened here recently.

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## Kelvinator Announces Summer Finance Plan

DETROIT—To make it easier for prospects in the middle-income groups to buy appliances during the summer months, ReDisCo, Kelvinator financing company, has announced a new "purchaser's protection plan."

Under the new protective financing arrangement, a Kelvinator appliance purchaser is given three months protection in case his income is suddenly stopped through no fault of his own by strikes, layoffs, etc.; one month's protection in case of sickness, and cancellation of the unpaid balance due on an appliance contract if the one who signed the contract and is chief wage earner, dies.

The plan provides Kelvinator salesmen with a novel closing method, and one which is expected to be a potent aid in selling ranges, refrigerators, and laundry equipment to buyers in the middle-income group, company officials believe.

Provisions covered in the plan are stipulated in the Kelvinator purchaser's protection bond which will be supplied to prospective buyers.

## Refrigerator Tax Bill Extended For Another Two Years

WASHINGTON, D. C. — A bill extending for two years the excise taxes on certain products, including radios and mechanical refrigerators, has been signed by President Roosevelt. These taxes were originally levied for emergency purposes.

## 48 Comfort Cooling Installations Made In Houston, Tex. During June

Type of Establishment	Type Equipment	Tons	Hp.
Smart Shop .....	Westinghouse	18	25
Maxwell House .....	Westinghouse	5	7
McDermott & Co. ....	Kelvinator	2	2
B. V. Christie & Co. ....	Kelvinator	3	3.2
Dr. F. F. Meine .....	General Electric	1	1
Lone Star Cement .....	General Electric	4.5	5.3
Foley Bros. (5th) .....	Frigidaire	22	24
Foley Bros. (6th) .....	Frigidaire	16	18
Foley Bros. (7th) .....	Frigidaire	16	18
Dr. J. G. Eganhouse .....	Frigidaire	.75	.75
Dr. R. C. Botts .....	Frigidaire	.5	.5
S. D. Anderson .....	Frigidaire	.75	.75
C. C. Perry .....	Frigidaire	.75	.75
Maritime Oil Co. ....	Frigidaire	5	5.75
G. S. Cohen .....	Frigidaire	3	3.5
Dixie Heating & Ventilating .....	Frick	4.5	7
L. J. Wheeler .....	Pacific	.5	...
Lechenger .....	Pacific	.5	...
McAn Shoe Store .....	York	5	6.5
Texas Star Flour .....	York	10	12.5
D. F. Peyton Co. ....	York	20	31
American Can Co. ....	Carrier	25	30
Chestnut Barber .....	Carrier	6	8.5
E. A. Showers .....	Carrier	6	8.5
Houston Milling .....	Carrier	.7	.75
G. Ratcliffe .....	Carrier	.7	.75
Norge Houston Co. ....	Carrier	.7	.75
E. M. Smith .....	Carrier	.7	.75
J. R. Suman .....	Carrier	.7	.75
Harry Edwards .....	Carrier	.7	.75
R. E. Paine .....	Carrier	.7	.75
R. W. Gruendler .....	Carrier	.7	.75
Florsheim .....	Carrier	3	3.75
Houston Appliance .....	York	.75	.75
Rouse Drilling Co. ....	York	1	1
Elkins, Swaton .....	York	1	1
Houston Post. Co. ....	York	1	1
Damon Wells .....	York	.75	.75
Star Electric & Engineering .....	York	.75	.75
John S. Mellenger .....	York	.75	1
Jo. A. Burt .....	York	.87	1
Carl Myer .....	C-air	.75	.75
F. J. Sandboel .....	C-air	.5	.5
Hardy's Beauty Shop .....	C-air	1	1
Hollyfield Laundry .....	C-air	1	1
Dr. L. B. Outlaw .....	C-air	1	1
A. H. Black .....	Airtemp	3	3.33
Thornhill Cafe .....	Perfection-Aire	7.5	7.5

# A SPANKING BREEZE

IS A THRILL TO THE YACHTSMAN

BUT IN THE CITY EVEN A BREATH OF FRESH AIR IS A THRILL!

Aboard a yacht a man looks to the air for power . . . but in the city he looks to it for relief from the oppressing humidity of the heat packed streets and buildings. He wants his air to be cool, fresh and pure. He looks for these qualities in air-conditioning.

The famous moisture-free refrigerants, ESOTOO (liquid sulphur dioxide) and V-METH-L (Virginia methyl chloride), can't produce a sailing breeze but they can insure uniform dependable operation from your air-conditioning system. These proven products, the choice of wise dealers and service men everywhere, are available for immediate delivery from ample stocks maintained at all important distributing points throughout the world.

EXTRA DRY  
ESOTOO  
and  
V-METH-L

PRODUCTS OF  
VIRGINIA SMELTING CO.  
WEST NORFOLK, VA.

**McQUAY**  
**COMFORT**  
**COOLERS**



For direct expansion refrigerants; also available as combination cooling and heating units, where cold water or brine is used as the cooling medium, and where steam or hot water as the heating medium . . . The ideal simplified cooling unit . . . Precision built! Numerous sizes with capacities to fit any requirements.

WRITE for New Catalogs on McQUAY Unit Coolers, Radiant Coolers, Cabinet Concealed Radiant Refrigeration Units, Ice Cube Makers, Air Conditioning Units, Blast Cells, Combination Heating and Cooling Units, Suspended and Floor Type Room Coolers, etc.

**McQUAY**  
MINNEAPOLIS, MINNESOTA



## Milwaukee Men Hear Both Sides of Fair Trade Question

MILWAUKEE—Differing opinions regarding the value and workability of fair trade acts as applied to the merchandising of electrical appliances were expressed by Harold G. Erstrom, now associated with the Underfeed Stoker division of Whiting Corp., and Fred R. Wright, local attorney, when they spoke before more than 100 members of the local household appliance industry June 23 at Hotel Knickerbocker.

Mr. Erstrom, formerly engaged in the radio business in San Francisco, expressed himself as being wholeheartedly behind the fair trade movement, and a staunch supporter of the value to be gained from application of these acts to the appliance industry.

Mr. Wright, speaking from experience derived from participation in numerous fair trade litigations, warned of the difficulties and entanglements encountered by those who attempted to make use of fair trade statutes.

### COOPERATION ESSENTIAL

Pointing to the way that concerted effort under the California fair trade act aided in cleaning up competitive merchandising conditions in San Francisco and northern California, Mr. Erstrom emphasized the fact that complete cooperation is essential to the success of any fair trade program.

"All cards," he said, "must be laid on top of the table. The success achieved will depend entirely upon the desire and determination to make the thing work."

Mr. Wright, who recently was defense counsel in a case in which the Wisconsin Supreme Court handed down a decision upholding the constitutionality of the state's fair trade act, pointed out that the chief uncertainty of any fair trade program is the answer to this question: Who can properly and legally make a fair trade act contract with reference to items made by a national manufacturer operating in interstate commerce?

### ANTI-TRUST TROUBLE

He explained that the outstanding difficulty with all existing fair trade acts (they now have been adopted in 39 states) is that such a manufacturer cannot use these acts for fixing the resale price of his product without violating provisions of the Sherman anti-trust laws.

A bill to exempt such transactions from the Sherman act is pending before Congress, but, according to Mr. Wright, has been sidetracked because of opposition by the Federal Trade Commission. Until such a bill is passed, manufacturers engaged in interstate commerce cannot directly enter into the use of fair trade acts.

And although it is generally believed that distributors in their respective states may make price-fixing contracts with retailers, Mr. Wright personally believes that this also is a question which will have to be ruled on by the courts. The decision of the Wisconsin Supreme Court did not cover this point.

### NOT UNCONSTITUTIONAL

Mr. Wright made it clear, however, that there is no question as to the constitutionality of Wisconsin's fair trade act in reference to price maintenance on items that come entirely under intrastate commerce.

Even these price contracts, however, are enforceable only by injunctive relief, Mr. Wright said, and there seems to be considerable confusion as to who can properly make a complaint and seek such relief.

The fair trade act provides for no criminal penalty in the case of broken price-maintenance contracts, and the only criminal liability involved might result if the party made himself liable for contempt of court by violating an injunction issued under the act. Mr. Wright expressed a belief, however, that the injured party would have a basis for a damage suit if he could show actual monetary loss.

### FRANCHISE AVAILABLE

COMMERCIAL REFRIGERATION and display cases. Kansas City distributorship already established on profitable and successful basis. Available to competent sales executive with sufficient capital to finance current operations. Write for details, giving references and qualifications. Box 951, Air Conditioning and Refrigeration News.

## Indianapolis Group Launches Campaign On Electrification

INDIANAPOLIS—Indianapolis Retail Appliance Dealers' Association has launched a campaign to acquaint homemakers with the advantages and economies of more complete electrification in the home.

Based on the slogan "Indianapolis Modernizes Electrically—It Costs So Little," the campaign is being publicized through window placards, car stickers, radio talks, and newspaper advertising.

L. O. Rainer is president of the association, and Ted C. Brown is secretary.

## General Electric Contracts For N. Y. Fair Space

NEW YORK CITY—General Electric Co. has contracted for 68,339 sq. ft. of exhibit space in New York's 1939 World's Fair.

The General Electric exhibit will be housed in a separate building and will present a complete picture of the development of the electrical art and its projection into the future.

Architects and technicians are now working on the details of G-E's presentation, which will considerably amplify the "House of Magic" idea which proved so popular at the Chicago fair of 1933-34. Particular emphasis will be placed on electricity in the "world of tomorrow" on farms, in the home, in industry and transportation, and in the social life of man.

## Licensing of Contractors Law in Milford, Conn.

MILFORD, Conn.—Licensing of all electrical contractors is mandatory under an ordinance now effective here. A board of examiners has been created to examine applicants for licenses.

Under provisions of a law recently enacted by the state legislature, which became effective July 1, holders of city and town electrical contracting licenses may apply for a state permit, with the privilege of working throughout the entire state.

## Mississippi Dealership Changes Hands

GREENWOOD, Miss.—J. D. Buckley has purchased the Provine Electric Co. from Robert E. Provine. The company will continue to handle Frigidaire refrigerators, RCA-Victor radios, and Easy washing machines. Walter Jordan, formerly a salesman in the store, has been named manager.

## 2 District Managers Named By Crosley Radio Corp.

CINCINNATI—Erle F. Morford and Herbert K. Sadler are new Crosley Radio Corp. district managers, announces Thomas W. Berger, general sales manager.

Mr. Morford will be in charge of the Pittsburgh and Cleveland territory, with headquarters at Cleveland. Mr. Sadler will cover New York state, with headquarters at Rochester.

## Mauger Heads Hotpoint Quarter Century Club

CHICAGO—Harry Mauger, assistant to the president of Edison General Electric Appliance Co., was elected president of the Hotpoint Quarter Century Club at an organization meeting here recently.

Members of the club, all of whom have been with Hotpoint for 25 years or more, include George A. Hughes, president of the company; H. E. Johnson, warehouse stocks; R. Jacobs, personnel department; C. F. Randolph, chief engineer; J. L. Shroyer, engineer, heavy duty division; R. W. Turnbull, vice president and general sales manager; and B. W. Rowley, district manager.

## G-E Renews 'Hour of Charm' Program for Summer

NEW YORK CITY—General Electric Co. has renewed its weekly radio program, the "Hour of Charm" featuring Phil Spitalny's all-girl orchestra, for the summer season, beginning July 12. The broadcast is presented Monday evenings at 9:30 EDT over the red network of the NBC.

## 2,000 Refrigerator Owners In Town of 5,000

MADISON, Wis.—Records of Every House Appliance Co., Westinghouse refrigerator distributor, show more than 2,000 refrigerators sold in this city of 57,000. Fred Hein is sales manager of the firm.

## Utility's 'All-Service' Selling Plan Begun

SUPERIOR, Wis.—Superior Water, Light & Power Co. has inaugurated an "All-Service Selling Plan," under which the utility will confine its appliance merchandising efforts to promotional and educational activity designed to boost appliance sales of local independent dealers.

Among appliance company representatives taking part in the plan's inauguration were:

F. A. Johnson, Westinghouse Electric Supply Co., Duluth, Minn.; Elmer A. Cone and Kenneth G. Sims, Welsback Co., Chicago; C. H. Gunn, Frigidaire Corp., Minneapolis; Walter Abbott, Estate Stove Co., Minneapolis; E. B. Dorsee, manager of Frigidaire's Twin City branch.

Russell Barnes and F. A. Halstead, Kelly-Howe-Thompson Co., Duluth; Fred Egger, Edison General Electric Appliance Co., Chicago; D. B. Wilkins, J. A. Fagan Co., Milwaukee; A. M. Tanning, Roycraft Co., Minneapolis.

## REA Allotments Now Cover Expenses of Load-Building

WASHINGTON, D. C.—Allotments approved by the Rural Electrification Administration now stipulate an allowance for load-building promotional activities during the construction period and the early stages of operation, usually covering an 18-month period.

The amount of the appropriation is considered separately for each project.

## "RIGHT IN THE GROOVE" FOR LARGER PROFIT!

**YOU** can satisfy every customer with Goodyear Fractional Horsepower Replacement V Belts because Goodyear makes the *right* belt for every type of V belt drive. Over 200 different sizes specially designed to fit every different make and model of air conditioning unit, household appliance and light machinery — each one "right" in length, "right" in cross section. "Right" — because tests prove the Goodyear-perfected high tensile endless cord carcass construction lasts longer and stretches less. "Right" — because they bear the greatest name in rubber that stands for highest quality and value in belting. That's a combination that's right in the profit groove for you! For Handy Application Guide and complete information, call your jobber — or write Goodyear, Akron, Ohio, or Los Angeles, California.

FOR BEST PERFORMANCE  
ON LARGE AIR  
CONDITIONING UNITS  
SELL

**GOODYEAR**  
EMERALD CORD MULTIPLE  
V BELTS

made in matched sets  
uniform length  
accurate cross section

## NOW — MAKE REAL MONEY ON WASHING MACHINE WRINGER ROLLS

Goodyear Universal Washing Machine Wringer Rolls eliminate carrying a large stock of made-up rolls, increase turnover and profit. Made in six standard diameters with extra rubber and shaft length that can be quickly cut to fit any wringer with Goodyear Combination Milling Machine. Write for data.



THE GREATEST NAME IN RUBBER  
**GOODYEAR**

FRACTIONAL HORSEPOWER ENDLESS CORD V BELTS



## SPECIALTY SELLING IDEAS

### Drug Store's Major Appliance Department One of Its Main Business-Getters

FALLON, Nev. — Started three years ago after successful experience with small electrical appliances, the Norge major appliance department of Morris & Loring Drug Co. in this town of 1,700 people has become one of the store's major sources of income, says P. A. Bailey, vice president.

During the first quarter of 1937, sales equaled those for the whole of 1936. Sales to May 1 included 12 household refrigerators, 11 oil heaters, four electric ranges, a washer, an ironer, a water cooler, and an air furnace.

And not only does this drug store sell major appliances, but it services them as well.

Mr. Bailey attends manufacturers' schools dealing with both household and commercial equipment, to become conversant with the mechanical construction and chief selling points of all appliances handled.

"Because we know our appliances thoroughly, we are able to pass useful knowledge on to our patrons," he says. "In the past three years, not a customer has had to pay a cent for service replacement parts."

Best place for the major appliance

display, says Mr. Bailey, is in the center or rear of the drug store.

In the Morris & Loring establishment, a space 15 feet square is reserved near the middle of the room, and appliances displayed there can be seen from all sides. The front of the store is used for such quick selling lines as cigars, toiletries, candy, and stationery.

Actual models carried for demonstration purposes include four refrigerators, one range, one washer, and one ironer. As soon as one appliance is sold, another is ordered to replace it.

To remind the public that this drug store is in the major appliance business, a Norge neon sign has been placed over the store. Motion picture advertising, newspaper space, and circulars also are used.

So far this year, says Mr. Bailey, 5,000 circulars have been used in lots of 500 at two-week intervals.

Methods of obtaining major appliance sales are described by Mr. Bailey as follows:

By customer contacts and by supplying such good-will services as selling stamps and allowing free use

of the telephone, the drug store's management becomes acquainted with practically all citizens in the community. Through such contacts, the firm learns of many people considering the purchase of a refrigerator, range, or washer.

As soon as a prospect is discovered, someone from the company makes a personal call, preferably in the evening when both man and wife are at home.

Should the prospect not be a personal acquaintance of the store's representative, he is first asked for an appointment by telephone or mail.

For a number of years, the drug company has kept a list of all purchasers of minor electrical appliances.

This list is a valuable prospect roll, says Mr. Bailey, because the people named on it are already acquainted with the conveniences of using electrical merchandise, and the sales messages to them can concentrate on easy payment terms, lasting quality, and the use of appliances in safeguarding health.

Another useful method is to tie-in with special "days" and "weeks" such as Mothers' day, National Baby week, Better Homes week, birthdays, anniversaries, and Christmas.

By keeping close watch of marriage licenses and news of impending marriages, prospective brides and their parents can be circularized and urged that the new home be started on the electric plan.

When a lumber merchant or dealer in building materials runs an advertisement suggesting building or home modernization, Mr. Bailey points out, the thing to do is buy space near that advertisement and advise that the home be electrically equipped.

### 30% of Distributor's Sales Made Through 'Bird Dog' Employees

ALBANY — Albany Garage Co., Kelvinator distributor and retailer here and proprietor of the world's largest storage garage, has developed the selling talents of its 175 employees to the extent that the firm is averaging 175 refrigerator sales a year—30% of its retail volume—through their "bird dog" efforts, says Paul D. Mashburn, sales manager.

Although the company follows a "use the user" plan and pays \$2.50 to \$5 for productive prospect leads from its customers, one of its best sales plans is to utilize the large acquaintance of the garage personnel to produce a good portion of its retail sales.

In fact, Mr. Mashburn declares, he is often tempted to take some of his shop men across to the other side of the building and set them up on the refrigeration sales floor as full time salesmen.

By using a series of sales boosters in the form of cash prizes and merchandise contests for everybody employed in the garage, Kelvinator sales have been made to new families arriving in Albany who ordinarily would not have been contacted until possibly months later, he says.

Garagemen have a reputation for knowing everybody, and when new people arrive here they frequently leave their cars in the Albany Garage until they buy or rent homes. Garage attendants who meet them every day frequently find out their refrigeration needs, and it is but a simple matter to escort the car owners over to the showroom, it is said.

The men get credit for each sale made through their efforts toward contest prizes. Latest of these was a straw hat contest in which sales below \$200 won employees a \$2.50 kelly, \$200 to \$350 a \$4 chapeau, and so on up to a \$10 Stetson for sales of largest boxes in the line.

"Nobody probably figures that there is much connection between a garage business and refrigeration sales, but we've drawn the two together through our set-up here," said Mr. Mashburn.

"In the first place, this is actually the world's largest garage, with a storage capacity of more than 2,000 automobiles on eight floors. People from all over New York state, particularly hotel guests, store their cars here and we average around 1,200 cars stored per day.

"That in itself," he continued, "means dozens of prospects every day, many of whom can be contacted by one of our 32 retail dealers in 12 counties around Albany. If they're local people, our employees ask them about their refrigeration needs and often make sales for us."

In one instance, Mr. Mashburn pointed out, a man from a distant state who was sold on a Kelvinator drove his car out on the same day and placed the box in the tonneau to take home with him. One of the ramp drivers closed this sale.

In the most recent inter-company sales contest, 68 refrigerators were sold through the efforts of garage employees, Mr. Washburn says.

Among the structure's features is a six-room penthouse on the roof where he and his family reside.

### TVA Will Not Sell Appliances In Memphis, Allen Says

MEMPHIS, Tenn.—Memphis electrical appliance dealers will have no competition from the local municipal power system when TVA power is supplied to consumers in December, Major Tom Allen, chairman of the city board of light and water commissioners, recently announced.

### Bicycle Premium Offer Increases Sales for Grunow Distributor

DETROIT—Return of the bicycle craze in full force has resulted in increased refrigerator sales for out-state dealers of Specialties Distributing Co., Grunow distributor in this territory—for these dealers are now offering a bicycle as a free premium to each purchaser of a Grunow refrigerator.

Principal promotion of these premium sales comes from the apparently powerful persuasion which bicycle-conscious children exercise on their parents, according to Leonard Turnbull, president of Specialties Distributing Co. and instigator of the premium plan.

Full cost of the bicycle premium is borne by the distributorship, which handles a line of bicycles in addition to its many brands of appliances.

For prospective refrigerator customers for whom the bicycle has no attraction, Specialties' dealers may offer a Grunow radio as an alternative premium. Cost of this premium is split between the distributor and General Household Utilities Co., Grunow manufacturer.

Although both premiums have done much to stimulate refrigerator sales in the distributor's territory, Mr. Turnbull reports that the bicycles have proven far more popular than the radios.

The premium plan is in effect only with out-state dealers of Specialties Distributing Co., says Mr. Turnbull, for the distributorship fears that local application of the plan might disturb the metropolitan refrigerator market.

### Batista Joins Canton Firm

CANTON, Ohio—George A. Batista has been appointed sales manager of Modern Home Utilities Co. here, according to John McKee, president.

## Protection

To prevent overloads from damaging motors, Delco has designed and built into its motors a "Thermotron." If, for any reason, motor windings approach an unsafe temperature, the "Thermotron" removes the motor from the electrical circuit. Thus, there is no damage to the motor or the refrigerator which it is operating. So carefully has this device been designed into the motor that the user is not only protected from having the motor damaged, but also is assured of getting the utmost power that the motor will deliver. This is only one of many features which Delco has developed to give refrigerator manufacturers and dealers the highest quality—and to give their customers the greatest in dependability and satisfaction. Delco Products Division, General Motors Corporation, Dayton, Ohio. In Canada: McKinnon Industries, Ltd., St. Catharines, Ontario.

DELCO  
MOTORS



MANHATTAN



Run smoothly . . . without noise . . . and last longer; repeated tests prove this.

The highly satisfactory service and life of these belts is due to the exclusive Manhattan construction: the endless Whipcord is completely floated in rubber, welded securely into a strong tension member which is placed in the neutral axis area. Above this an extensible section and below, a compression section. Result: internal heat reduced to a minimum.

THE MANHATTAN RUBBER MFG. DIV.

Of Raybestos-Manhattan, Inc.  
45 Townsend St. Passaic, N. J.



## Milwaukee Area Shows Gain of 9,210 Units Over 1936

MILWAUKEE—That the trend to mechanical refrigeration in the Greater Milwaukee area is continuing in 1937 is revealed by the fourteenth edition of the Milwaukee Journal's annual consumer analysis, projected from replies made by 6,700 housewives, or better than 3.5% of all the families in Greater Milwaukee.

The survey, shows that 57,761 families, or 31.7% of the total number in Greater Milwaukee, are using electric refrigerators this year. In 1936, the number of families was 48,551, or 26% of the total.

It was also found that 14,299, or 7.6%, of all Greater Milwaukee families expected to purchase electric refrigerators during the current year.

Total number of makes of refrigerators in use in Greater Milwaukee this year was found to be the same as in 1936—48. In 1934 there were 49 makes being used. In 1931 there were 18, and in 1929 there were 14.

A division was made in the survey to determine how many users of electric refrigerators owned their own machines and how many did not. Results show that in 1937 the number of owners is 50,021, or 86.6%. In the two previous years, 1936 and 1935, owners numbered 37,287, or 76.8%, and 31,985, or 74.6%.

During the same three years, the number and percentage of non-owners have decreased in proportion to the increase of owners. The figures for non-owners are: 1935—10,890, or 25.4%; 1936—11,264, or 23.2%; 1937—7,740, or 13.4%.

In addition to electric refrigeration, the survey covered electric washing machines, electric ironers, electric water heaters, electric cooking ranges, electric kitchens, and, as part of the section on homes, air conditioning.

This year, electric washers are owned by 148,825, or 79.1%, of all Greater Milwaukee families, as compared with 143,039, or 76.6%, in 1936, according to estimates made under the survey.

Total number of makes in use, says the survey, has declined from 140 as of Jan. 15, 1936, to 134 as of Jan. 15, 1937.

Of the total number of Greater Milwaukee kitchens, only 5,644, or 3%, contain electric ranges, according to the survey. Fifteen different makes were in use.

Expressing their intention to buy electric ranges in 1937 were 1,505 families, only 0.8% of the total.

For the first time in its existence, the Journal's survey included the subject of electric kitchens. The definition of an electric kitchen was given as one which is completely equipped with appliances such as electric refrigerator, range, sink, food mixer, ventilator, etc.

Housewives reporting that they had such a kitchen numbered 2,634, or 1.4% of Greater Milwaukee's total. Those stating that they expected to buy a complete electric kitchen in 1937 numbered 753, 0.4% of the total.

## Baseball Team Makes Sales for Indiana Crosley Dealer

NEW ALBANY, Ind. — Winning baseball games and selling Crosley products go hand in hand with Clifford Bensinger, local Crosley dealer. The Bensinger-Crosley baseball team, winning the pennant in its league for the past three seasons, has proved to be the most successful of the company's sales promotion features.

## New Appliance Firm Opens In New Britain, Conn.

NEW BRITAIN, Conn.—Home Appliance Sales & Service is the name of a new firm established here by Carl Milano and Sam Silvo.

## Cabinet-Type Dishwasher Is Developed by Westinghouse

MANSFIELD—A new cabinet-type electric dishwasher, combining a dishwasher, a sinkbasin, and work surfaces in an attractive space-saving unit, has recently been developed by Westinghouse Electric & Mfg. Co.

The Westinghouse cabinet dishwasher is adaptable to kitchens of all shapes and sizes, and occupies no more space than a standard kitchen sink and drain board, requiring only 48 x 25 inches of floor space. The cabinet may be installed as a separate unit, replacing an old sink, or may be placed adjacent to modern base cabinets, completing an all-electric kitchen.

The Monel metal sink basin has new design features which include a swinging pedestal type mixing faucet, and a combination drain and crumb cup which catches food particles and makes for easy cleaning. A standard toe space permits a comfortable working position while at the sink.

The dishwasher has a capacity of 57 dishes and 45 pieces of silverware, enabling the average sized family to wash all its dishes at one time.

The unit is easy to install, only plumbing connections being required to the hot and cold water pipes and to the drain. These connections are made at the sink as with standard sink installations. The dishtank is filled and emptied through a combination fill and drain fixture attached to the sink basin. Swinging type faucet insures the admittance of only hot water to the dishtank.

The all-steel cabinet is finished in white Dulux. The work top and back splash is finished either in black Micarta, Monel metal, or green Jasper linoleum with Monel metal trim.

In addition to the complete sink unit, Westinghouse is making available a 24-inch unit containing the dishtank and washing mechanism only. This unit is designed to be installed under existing work tops adjacent to present sinks. Its application and installation are flexible enough to permit it to fit in with almost all conditions and design requirements met in the kitchen.

## Sunbeam Awards Gold Badges to 9 'Pioneers'

EVANSVILLE, Ind. — Badges of gold, set with a diamond, have been presented to nine members of the Sunbeam Pioneers Club, an organization recently formed by Sunbeam Electric Mfg. Co. for those of its employees who have been with the company for 20 years or longer.

The nine members are Henry Schmidt, Riley Mayes, Herbert Glarden, Ed Herschelman, Ed Werzner, J. Henry Schroeder, Walter V. Stippler, Carl Wiggers and Louis Fischer.

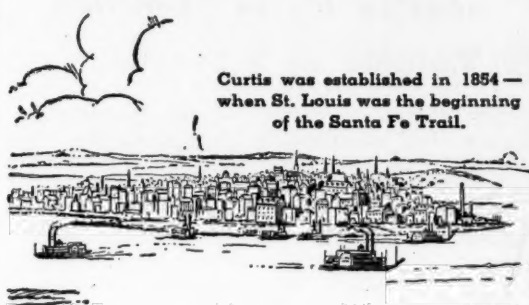
W. A. Carson, Sunbeam president, who presented the badges at the ceremonies recently held at the factory; J. Howard Dennedy, chief engineer, and A. C. Brockriede, personnel manager, have been named honorary members of the organization.

## Indianapolis Dealer Builds Model Kitchen in Store

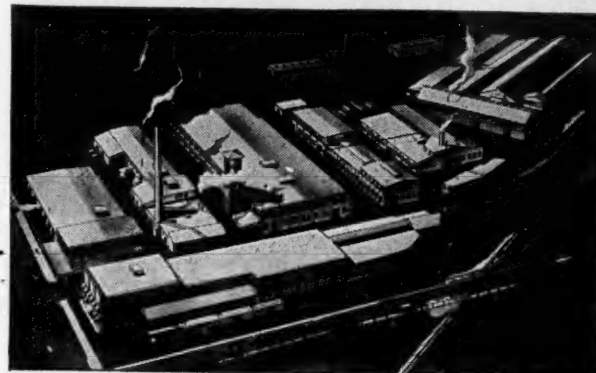
INDIANAPOLIS — Adams, Inc., Norge, Hotpoint, and Crosley refrigerator dealer, has established a model kitchen in its store to demonstrate the various lines of household appliances. Jack Klinger is manager of the appliance department.

## Carrolltown Appliance Becomes Kelvinator Dealer

NEW ORLEANS—Carrolltown Appliance Co. has become a Kelvinator dealer here. At the opening of its new store, the company gave refreshments and souvenirs, including 100 aprons, to visitors.



Curtis was established in 1854 — when St. Louis was the beginning of the Santa Fe Trail.



## 20 ACRES of Modern Facilities...

● Curtis condensing units are produced in a comprehensive 20-acre plant, equipped with every modern engineering and production facility. They are the development of 83 years of designing and manufacturing experience, by an organization which established its name for reliability when Ulysses S. Grant was a wood-hauler on the streets of old St. Louis. That was 1854 — and from that beginning Curtis has reached the high and substantial place it now holds in the industry.

Eighty-six units comprise the Curtis line of today. Sizes range from 1/6 HP to 30 HP, with air-cooled and water-

cooled models. Unit coolers and coils to match are always in stock.

Curtis units are built to meet definite requirements — not price levels. Quality is the first consideration — price comes after. That is why so many dealers and installation engineers insist on Curtis units for all jobs. Curtis reputation safeguards their own.



Ulysses S. Grant probably hauled wood past the first Curtis establishment.

## CURTIS REFRIGERATING MACHINE COMPANY

Division of Curtis Manufacturing Co.

1912 KIENLEN AVENUE

ST. LOUIS, MO.

Represented in Canada by  
Canadian Curtis Refrigeration Co., Ltd.  
20 George St., Hamilton, Ontario

# CURTIS

# Smooth Sailing

It's clear skies and free sails when you chart your course with Ansul—a trouble-free existence in the refrigeration world—free from sandbars caused by incomplete range of cylinder sizes . . . by scattered distribution . . . by lack of quality.

Wherever you are, you'll find one of Ansul's 127 distributors near you, ready with enthusiastic and reliable service. You'll have an unlimited choice of cylinder sizes. And you'll know by the tag on every cylinder that its contents are analyzed for perfection.

Specify Ansul Sulphur Dioxide or Ansul Methyl Chloride; avoid the reefs of dissatisfaction.

## ANSUL

### SULPHUR DIOXIDE METHYL CHLORIDE

ANSUL CHEMICAL COMPANY  
MARINETTE WISCONSIN

**Anaconda Copper**  
REFRIGERATION TUBES  
They Flare without cracking  
THE AMERICAN BRASS CO.  
FRENCH SMALL TUBE Branch  
General Offices: Waterbury, Conn.





### 10 Indianapolis Dealers In Cooperative Drive

INDIANAPOLIS—Ten mechanical refrigerator dealers cooperated in a full-page advertisement in the Star recently. Background of the advertisement was a light blue, suggesting arctic temperatures and their food-preserving qualities.

Cooperating in the advertisement were:

Adams, Inc. (Crosley); Acme Electrical Appliance Co. (Hotpoint); the Advance (Hotpoint); Broad Ripple Appliance Co. (Hotpoint); C. Coonce Electric Co. (Spartan); Economy Radio Shops (Leonard); Federal Home Equipment Co. (Gibson); Rich & Co. (Grunow); Star Store (Hydro-Cold); and Wasson's Monument Place Store (Leonard).

### A.G.&E. Reports More than 50,000 Units Sold

NEW YORK CITY—Reports from Associated Gas & Electric System show sales in its territory of 50,560 electric and 2,350 gas refrigerators up to June 19.

Since May 10, start of the system's refrigeration jubilee, 26,281 electric and 1,190 gas refrigerators had been sold.



Known  
wherever refrigerants  
are controlled

### Electric Kitchen Promotion Gives Montreal Dealer \$10,000 Volume in 6 Weeks

MONTREAL, Que., Canada—Turning to kitchen modernization as a source of additional profits proved no false step for the Modern Household Appliances, Ltd. here, for within a six-week period the firm sold 10 kitchens at a \$10,000 sales volume.

Highlight of the firm's promotion to engender interest in kitchen modernization is a model house located at 4115 Oxford Ave. From the time it was opened to the public until the first of May, more than 6,000 persons visited the home and inspected the model kitchen installed by Modern Household Appliances, Ltd.

Taking advantage of the buying power released through the Household Improvement Plan instigated by the Canadian government, the appliance firm, under the direction of Hector M. Milne, salesman, had this Oxford Ave. residence renovated and modernized and made it a show place for displaying a model all-electric kitchen.

An illustrated article featuring the model home kitchen was given half-page space in the editorial columns of the Montreal Daily Herald. It described in detail the grouping of the General Electric range, refrigerator, dishwasher, and the arrangement of cabinets and shelves in the room.

Tie-in advertisements run by Modern Home Appliances, Ltd., the Canadian General Electric, and by contracting firms who had charge of plumbing, painting, and venetian blind accounts in the home, were

grouped around an insertion playing up the Home Improvement Plan, on the page with the article.

Indirect lighting and venetian blinds are other features of the model home. Basement of the home, remodeled to provide a games room, is used by Modern Household Appliances, Ltd. as a display space in which a number of G-E and Frigidaire refrigerators, and Hotpoint ranges are exhibited.

Airco Refrigeration Parts Reg'd, a division of Modern Household Appliances, Ltd. opened early in spring to operate as a refrigeration jobbing supply concern, is also proving a profitable venture, according to Mr. Milne, salesman, who reports that the company recently has distributed 500 catalogs to Canadian refrigeration firms.

In addition to its retail merchandising activities, Modern Household Appliances, Ltd. is entering the manufacturing field and plans to introduce a 5-cu. ft. domestic electric refrigerator to sell for approximately \$159, states Mr. Milne. The refrigerator is powered by a Kellogg direct drive unit with a Fedders evaporator and expansion valve, and a Cutler-Hammer control.

### Survey Shows St. Louis Has 165 Electrical Appliance Stores

ST. LOUIS—Greater St. Louis has 165 retail electrical appliance stores, according to a recent survey. The population of this territory is about 1,150,000.

### 'Talking' Refrigerator Used By Norge Dealer

MOUNT HOLLY, N. J.—The voice of a Norge refrigerator standing in front of Calden Furniture Co. accosts passers-by and attracts their attention to the display of Norge appliances there.

"Good morning, madam," the refrigerator might say, "don't you think I'm a good-looking refrigerator?" When the woman stops, obviously puzzled, the Norge's informal, chatty voice suggests that she meet the other members of his family who are grouped around him.

Through use of a loudspeaker installed in the refrigerator's freezing unit, an inter-office phone system, and an operator concealed where he may have a good view of the street in front of the store, the Calden company uses this method to draw attention to its Norge line. The trick was staged by Harry G. Wright, Calden's service manager.

After the talking refrigerator has succeeded in engaging the attention of passing individuals, a salesman steps forward and enters into conversation with one or more of the curious people standing around, all of whom are regarded by the store as prospective customers.

While trying to sell the people on the merits of the Norge line, the salesman usually explains the operation of the mysterious voice. Although perhaps no actual sales are made on the spot, the salesman invariably gets a number of people to fill out prospect cards.

According to Mr. Wright, the only equipment necessary for such a scheme is a product display, a two-way inter-office phone system equipped with a combination speaker and microphone, some signs and sales literature and a pocketful of prospect cards for each salesman.

If a clever and witty person is acting as the "voice of Mr. Norge," innumerable variations of the "good morning" or "how do you do" approach may be carried out. For instance "Mr. Norge" may strike up a conversation with the salesman on duty concerning some feature of the Norge line. Or if the operator should recognize some of the persons passing, he can call them by the name.

Considerable interest may be built up by appropriately timed remarks such as: "Won't someone help that lady with her packages?" or "Go ahead, sir, slam the door of that Norge oven! It's built to take it."

Did the stunt work? Well, six actual sales and a number of live leads were obtained by Calden Co. in the first eight days of its operation, says Mr. Wright.

### 33% Sales Increase Reported By Baltimore Utility

BALTIMORE—Sales of gas and electrical appliances in the territory covered by the Consolidated Gas, Electric Light & Power Co. of Baltimore for the first five months of this year, are 33% greater than those of the corresponding period in 1936, reports Herbert A. Wagner, president.

### Use-the-User Expert Turns 1 Sale into 9

MINNEAPOLIS — Salesmen who think that the use-the-user plan is a worn-out selling method should talk to William Meyer of Beecher-Cummings, Inc., Westinghouse dealership here, for his sales records give definite proof that rewarding satisfied users for prospect names is highly successful in pyramiding sales.

Here's an example of Mr. Meyer's chain sales-building system:

He recently sold a 9-cu. ft. refrigerator to a lady named Kipp. She was interested in the Owner's Club and gave him the name of a neighbor.

The next night Mr. Meyer called on the neighbor, gave a demonstration, and got a signed order. This lady told him about one of her friends who needed a refrigerator and he made a third sale. A lead obtained from this new user meant another sale.

Then Mr. Meyer called back on the customer whose sale was the second link in the chain, and obtained another prospect name. He sold another refrigerator, and when he went back to let the user choose her prize, she supplied him with two more prospect names. Meanwhile two more leads were submitted from this chain of users—and Mr. Meyer expects to close two more sales soon.

The secret of this "nine-from-one" plan, according to Salesman Meyer is: "Call on the suggested prospect immediately. Close the sale as soon as possible. As soon as the sale is made, notify the owner who furnished the lead, find out what prize she wants, and deliver it yourself as soon as possible."

### Miles Says Range Salesman Must Also be Teacher

DETROIT—Electric range salesmen must be able to teach as well as sell, says Pierre L. Miles, Kelvinator range and water heater sales manager, in explaining that the average housewife has only a vague notion of the increased efficiency provided by the modern electric range.

"Women," Mr. Miles points out, "not only must be sold ranges, but must be taught how to use them to greatest advantage."

In Mr. Miles' opinion, range salesmen who are able and willing to offer this instruction are the ones most apt to succeed.

Mr. Miles' five point instruction program for range efficiency includes:

Use of economy cookers featured on all modern ranges; advantages of cooking fruits and vegetables in their own skins; importance of exact oven temperatures for various cooking operations; value of "cooking by the clock" through use of automatic time control; and value of the range's table-top section as an aid in meal preparation.

### Two New Distributors Appointed by Apex

CLEVELAND — Appointment of two new distributors to handle Apex electrical appliances has been announced by Charles W. Smith, general sales manager of Apex Electrical Mfg. Co.

The K K Co. of Holdrege, Neb., will handle Apex appliances in the state of Nebraska, and E. A. Hudson Furniture Co., Houston, Tex., will serve as distributor for Houston and surrounding territory.

### Topeka Firm in New Location

TOPEKA, Kan.—Dodge & Van Es Electric Co., handling Crosley and Hotpoint appliances, has moved to a new location at 114 E. Seventh St.



## REFRIGERATORS

## IN USE TODAY ARE INSULATED WITH BALSAM-WOOL FIBRE SEALED SLABS

● Sixteen out of twenty-nine nationally known refrigerators specified Balsam-Wool Fibre Sealed Slabs in 1937.

Actual field tests in millions of homes have proved the superior qualities of Balsam-Wool Fibre-Sealed Slabs.

Balsam-Wool Fibre Sealed Slabs are fabricated within the refrigerator plant according to the rigid specifications and requirements of each cabinet—thus assuring the public complete satisfaction and economy of operation after years of usage.

Plant owners everywhere have found it to their advantage to fabricate their own refrigeration insulation. Special licensed machines make it possible for them to produce Balsam-Wool Fibre Sealed Slabs to meet their requirements. No large storage space is necessary, or large inventories of finished stock. The slabs are made up as needed, finished to suit production schedules.

Investigate further about America's No. 1 Refrigerator Insulation. Write us for the facts.

### WOOD CONVERSION COMPANY

Refrigeration Sales Division • 360 N. Michigan Ave., Chicago, Ill.

St. Paul, Minn. • New York, N. Y.

# BALSAM-WOOL FIBRE SLABS

PRODUCT OF WEYERHAEUSER



Send for the New

### REFRIGERATION CATALOG

Seven Models of Compressors  
Fifty-eight Models of High-sides from 1/4 H. P. to 15 H. P.

BRUNNER MANUFACTURING CO.  
UTICA, N. Y.



## TAG POCKET THERMOMETERS

Refrigeration servicemen need the accuracy and dependability of TAG Pocket Thermometers. These thermometers can be furnished in mercury or spirit-filled, with ranges of -30 to +120°F., +30 to +120°F. or 0 to 220°F., 6" in length. Send for prices and a copy of the TAG Control and Test Equipment Catalog No. 1136-25.

ASK YOUR JOBBER ABOUT TAG POCKET THERMOMETERS AND CONTROLS.

C. J. TAGLIABUE MFG. CO.  
Park & Nostrand Ave's., Brooklyn, N. Y.





## AIR CONDITIONING NEWS

### Hotels Adopting Conditioning at Record Rate, Survey by Henderson Shows

WASHINGTON, D. C.—Hotels all over the country, from those in the largest cities to those in towns of 3,000 or less population, are wholly or partially air conditioning their buildings at an unprecedented rate, according to William B. Henderson, executive vice president of Air Conditioning Manufacturers' Association.

About 1,000 of the nation's 6,000 hotels already are air conditioned at least in part, he said.

Improvement of the 700 guest rooms of the Mayfair and Lenox hotels in St. Louis, and the start of a \$1,000,000 expansion plan for Chicago's Palmer House that eventually will include year-around air conditioning for every part of that hotel were cited by Mr. Henderson as outstanding examples of the current trend toward air-conditioning hotels.

#### 2 MORE IN ST. LOUIS

Speaking of the Mayfair and Lenox installations, Mr. Henderson reported that downtown St. Louis will soon have 1,500 air-conditioned hotel rooms.

Current additions to the Palmer House's air-conditioned accommodations, he said, will include 160 guest rooms, the Grand Ballroom and the Red Lacquer room with their attendant foyers, the exhibition hall, 20 private meeting and dining rooms, and street-level shops and arcades. He explained that the system would later be extended to include the remainder of the hotel's 2,248 guest rooms and other portions of the building.

All public rooms in Chicago's Weston hotel also are being conditioned, according to Mr. Henderson.

Typical of small town installations, he declared, are those which cool the public spaces and dining rooms of Hotel Dale, Holdrege, Nebr., and of the Bank hotel, Aurora, Mo. Hotel Potter, Indio, Calif., which conditioned two floors last year, is now extending the conditioning

throughout the remainder of the building.

Air conditioning also is a feature of a recently announced nationwide net of 25-room hotels for motorists, according to Mr. Henderson.

#### OMAHA IMPROVEMENT

Further information contained in Mr. Henderson's report follows:

A \$500,000 improvement program including air conditioning of one floor of guest rooms as well as eating and drinking space has been undertaken by Omaha's Rome hotel. The Hill, also in Omaha, has conditioned its public rooms.

The seven-story, 120-room Ketchum in Tulsa, Okla., will be that city's first completely conditioned hotel when the installation is completed. Florida's first completely conditioned hotel is the George Washington, Jacksonville, where individual controls have been furnished for each of the hotel's 280 rooms.

Enlargement of the air-conditioning system in Hotel Adams, Phoenix, Ariz., has provided conditioning for 225 rooms. Equipment recently installed to condition public rooms and more than 250 guest rooms of New York's St. Regis is connected with an elaborate fresh-air duct system which was installed when the original building was erected.

Denver's Brown Palace has just conditioned two floors of guest rooms. Kansas City's Muehlebach has been completely air conditioned. Dallas' Adolphus and Baker each have conditioned 300 guest rooms.

Los Angeles' Ambassador has conditioned its famous Cocoanut Grove. The Californian, Fresno, Calif., is investing more than \$25,000 in air-conditioning equipment. Milwaukee's Plankinton is installing an addition to its present system. A contract has been let to condition the bedrooms of the Texas hotel, Fort Worth, and to completely condition the Jefferson, in Gilmer, Tex.

### 56 Carrier Units for N. Y., 'Glass House'

NEW YORK CITY—Air conditioning with finger-tip control to suit the needs of each individual occupant will be a feature of the new all-glass building at 56th St. and Fifth Ave. here.

Fifty-six individual units will be installed in the offices of Fifth Ave.'s "House of Glass" by Carrier Corp. The units will be controlled by a central system which will provide summer cooling and winter heating.

In addition to the individual units, another Carrier system will supply cooled air to the duct network running through the halls and reception and showrooms of the building.

Nearly 2 gallons of water per minute will enter the two Carrier machines on the roof of the five-story building. A Carrier evaporative condenser will be used.

Air conditioning is a vital requirement in this building because, with the exception of two entrances, all interior spaces will be sealed from the outside air.

### Decatur, Ill., Furrier Conditions Store and Storage Vault

DECATUR, Ill.—Schaffer & Gluck, furrier, has installed Carrier equipment to air condition its store and to provide cool, dry air for its concrete fur-storage vault.

Temperatures as low as 30° F. can be maintained in the storage vault, which has a capacity of 2,000 coats.

Both the air-conditioning system and the vault-cooling system were installed by Field & Shorb Co.

### 9 Philadelphians Make York '\$100,000 Club'

PHILADELPHIA — Formed early this year by Branch Manager M. S. Lehair, the "\$100,000 Club," composed of top-ranking salesmen of the Philadelphia branch of York Ice Machinery Corp., already has a membership of nine.

To qualify for membership in the club, a salesman must: 1. Sell \$100,000 worth of York equipment a year for three successive years; 2. Sell \$100,000 worth of equipment in five non-consecutive years; 3. Render meritorious service to the Philadelphia York branch over a period of time.

Present members of the organization are Harmon H. Fisher (deceased), F. A. Weisenbach, George O. Weddell, G. E. Tuckerman, M. G. Munce, A. Christensen, J. M. Lambert, R. H. McWilliams, and Mr. Lehair.

### Store's Cooling Plant Also Its Window Display Unit

HOUSTON, Tex. — Showmanship has been combined with utility by Air Conditioning Co. here.

The air-conditioning system which cools the offices of this firm is located right in one of the show windows, and is encased in glass walls so that every operation may readily be seen.

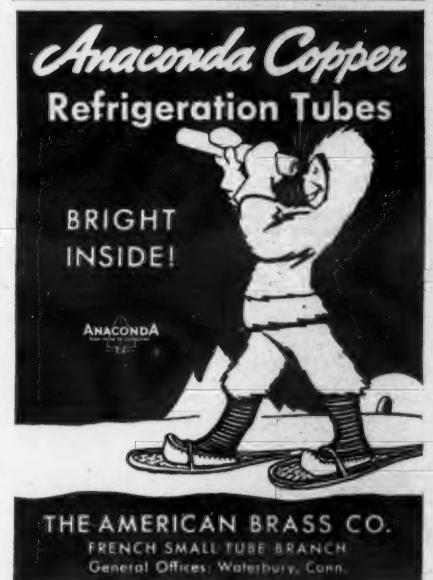
In the other window, the company has placed a large "Leborts" ventilating fan. Light flashes from the revolving blades of this fan serve to catch the eyes of passers-by.

### Utility Offers \$10 for Room Cooler Leads

RALEIGH, N. C.—So interested is Carolina Power & Light Co. in the load-building possibilities of room coolers that it is paying each of its 144 salesmen \$10 for every room-cooler lead turned over to a dealer and resulting in a sale within 30 days.

One of Pleasantaire Corp.'s Northwind air conditioners is installed in the utility's traveling appliance showroom. It is used not only as a display model, but to cool the trailer before appliance demonstrations.

Coker Air Conditioning Co., Hartsville, S. C., is distributor of Pleasantaire equipment in the North and South Carolina territory.

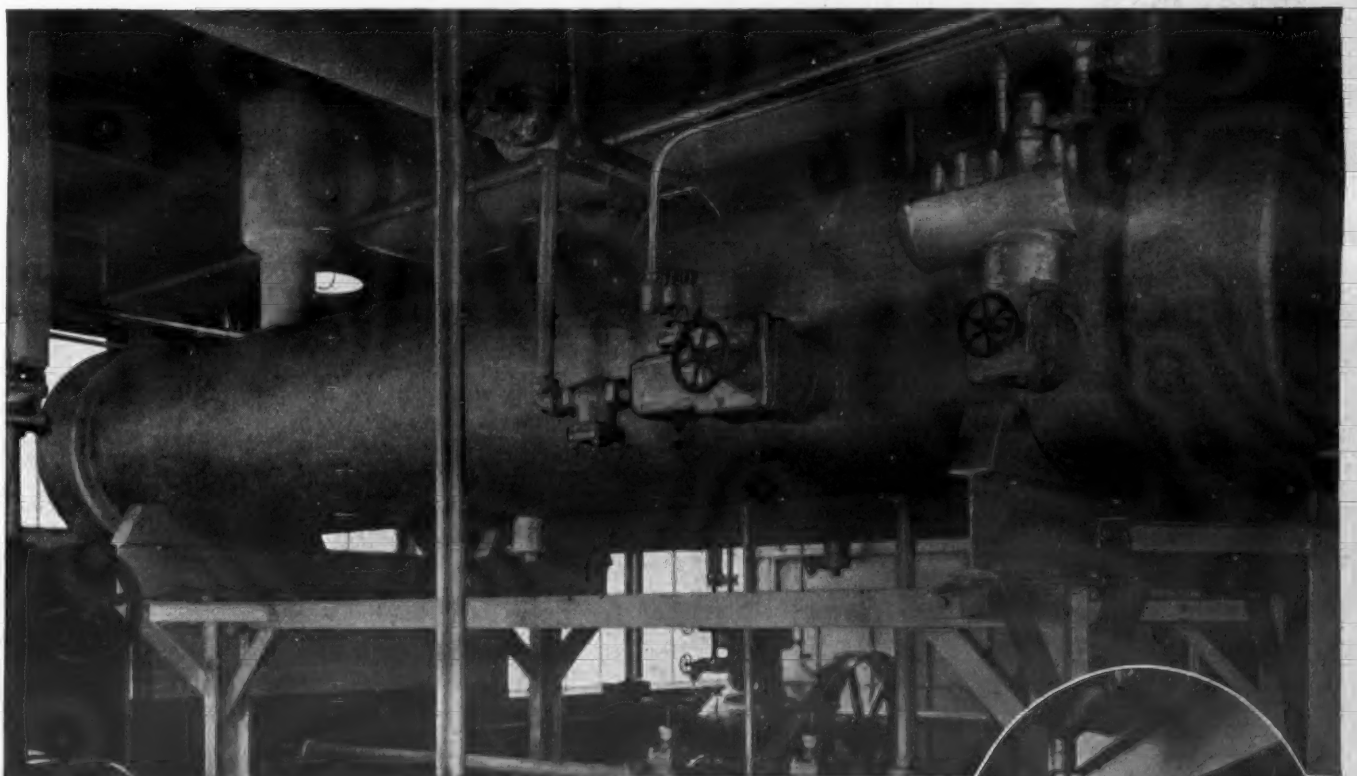


**Anaconda Copper Refrigeration Tubes**

BRIGHT INSIDE!

THE AMERICAN BRASS CO.  
FRENCH SMALL TUBE BRANCH  
General Offices: Waterbury, Conn.

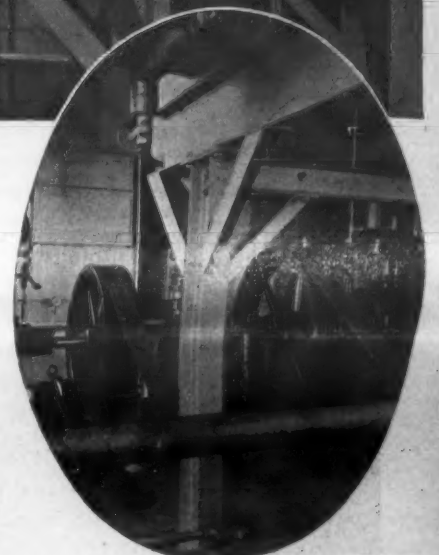
## CORK helps deliver CONDITIONED AIR in Buffalo's largest installation



ATOP SATTLER'S BUFFALO STORE, this engine room supplies conditioned air to floors below. All ammonia piping, shell and tube vessels are insulated with Armstrong's Cork Covering. Consulting Engineer: Edward C. Ashley, New York City.

SATTLER'S big Buffalo store boasts the city's largest air conditioning installation. 480 tons of refrigeration is supplied by machinery, located in a penthouse on the roof. Conditioning units deliver 165,000 cubic feet of air a minute throughout the store. Efficient operation is assured by insulation with Armstrong's Cork Covering, specified by Edward C. Ashley, consulting engineer, New York City. This cork insulated equipment serves for both summer cooling and winter heating use.

Cork presents a definite barrier to the passage of heat, and keeps refrigeration loss at a minimum. And its natural resistance to moisture assures long life, with continued efficiency in service. Let Armstrong work with you in planning insulation for air conditioning jobs. Write for complete information about Armstrong's Cork Covering and Corkboard Insulation to Armstrong Cork Products Co., Building Materials Division, 1002 Concord St., Lancaster, Pennsylvania.



#### VIBRACORK QUIETS MACHINERY

Although this 120 tons of air conditioning machinery is in constant operation, noise and vibration are not transmitted to the store floors beneath it. This nuisance is avoided by a vibration-absorbing cushion of Armstrong's Vibracork installed under compressors, pumps, and other equipment. The Mollenberg-Betz Machine Company made the installation of Buffalo Forge Company air conditioning units and Frick compressors.

# Armstrong's CORK COVERING

CORKBOARD INSULATION VIBRACORK

### IS IT SAFE FOR THE SERVICE MAN TO DO



• Any service man who has been over the ground knows that more and more of the leading refrigerator manufacturers are standardizing on Cutler-Hammer Refrigerator Control. This fact is doubly important to the man who knows what thorough and exhaustive tests precede such a decision.

And every service man who is trying to establish himself soundly with his customers knows that what is best for the box must be best for him. That is why more and more service men standardize on the same control... Cutler-Hammer Control... for replacement service. It's the only control that gives them the proven features of C-H Design. Write for literature. CUTLER-HAMMER, Inc., Pioneer Manufacturers of Electric Control Apparatus, 1362 St. Paul Ave., Milwaukee, Wis.



#### Check These Outstanding Features of C-H Refrigeration Control

- ✓ 4 models meet nearly every need
- ✓ Famous C-H overload protection now available for replacement control
- ✓ C-H settings are dependable, stay the way you set them for years
- ✓ All wanted advantages: cold control; defrost position; adjustable temperature and pressure range; each model fits large or small openings; mounts horizontally or vertically; simple connections.



## SALES FIGURES

### 333,869 Household Units Sold by Nema Manufacturers During May, 1937

The following 15 member companies of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) reported household refrigerator sales for May, 1937: Apex Electrical Mfg. Co., Crosley Radio Corp., Fairbanks, Morse & Co., Frigidaire Corp., General Electric Co., Gibson Electric Refrigerator Co., Kelvinator Corp., Leonard Refrigerator Co., Norge Corp., Servel, Inc. (export only), Stewart-Warner Corp., Sunbeam Electric Mfg. Co., Uniflow Mfg. Co., Uni-

versal Cooler Corp., and Westinghouse Electric & Mfg. Co. Member companies not reporting included: Jomoco, Inc., Merchast & Evans Co., and Sparks-Wittington Co. The sales of the reporting companies do, however, include units manufactured for the following concerns: Major Appliance Corp., Montgomery Ward & Co., Potter Refrigerator Corp., and Sears, Roebuck & Co.

SALES FOR MAY, 1937						
Lacquer (Exterior)		Domestic		Canadian		Other Foreign
Cabinets Complete	Quantity	Value	Quantity	Value	Quantity	Value
1. Chest	1,420	\$ 68,726	22	\$ 1,067	184	\$ 9,485
2. Less than 3 cu. ft.	10	603	.....	.....	.....	.....
3. 3 to 3.99 cu. ft.	7,700	475,940	117	7,122	3,378	208,265
4. 4 to 4.99 cu. ft.	43,088	2,886,451	1,690	114,492	5,209	360,010
5. 5 to 5.99 cu. ft.	69,708	5,548,108	1,462	119,756	3,436	290,005
6. 6 to 6.99 cu. ft.	108,719	9,503,394	641	58,649	1,554	147,014
7. 7 to 7.99 cu. ft.	22,549	2,310,034	106	11,066	692	83,354
8. 8 to 8.99 cu. ft.	10,549	1,104,902	1	98	388	49,382
9. 9 to 10 to 12.99 cu. ft.	208	26,390	.....	.....	.....	.....
10. 13 cu. ft. and up	.....	.....	.....	.....	.....	.....
11. Total Lacquer	263,951	21,924,518	4,039	312,250	14,941	1,147,515
Porcelain (Exterior)		Domestic		Canadian		Other Foreign
Cabinets Complete	Quantity	Value	Quantity	Value	Quantity	Value
12. Up to 4.99 cu. ft.	1,660	126,766	45	3,569	82	4,894
13. 5 to 5.99 cu. ft.	7,791	700,236	162	14,977	250	22,612
14. 6 to 6.99 cu. ft.	21,134	2,105,637	65	6,720	193	20,035
15. 7 to 7.99 cu. ft.	5,496	617,163	35	3,998	127	14,206
16. 8 to 8.99 cu. ft.	3,725	461,792	7	947	209	27,320
17. 9 to 9.99 cu. ft.	406	77,379	3	592	54	9,460
18. 10 to 12.99 cu. ft.	726	143,673	8	1,634	54	10,364
19. Total Porcelain	40,938	4,232,646	325	32,437	949	108,881
20. Total—Lines 11 and 19	304,889	26,157,164	4,364	344,687	15,790	1,256,396
Separate Systems		Domestic		Canadian		Other Foreign
21. 4 Hp. or Less	1,628	84,037	428	15,359	2,800	121,179
Separate Household		Domestic		Canadian		Other Foreign
22. Evaporators	3,250	26,173	49	757	671	10,428
23. Total—Lines 20, 21, 22	309,767	.....	4,841	.....	19,261	.....
Condensing Units		Domestic		Canadian		Other Foreign
24. 1/4 Hp. or Less	1,456	99,507	51	3,412	430	27,860
25. Cabinets—No Systems	2,738	87,302	2	202	79	4,615
26. Total Household	.....	\$26,454,183	.....	364,417	.....	1,420,478



Yes Sir, Wolverine Copper Refrigeration Tubing is just that—PLENTY SOFT, to be easily shaped, cut or flared to any requirement, in any installation. Wolverine Copper Refrigeration Tubing is made with extraordinary softness, to make your job of fabrication easier and faster, and that means money in your pocket.

An installation with Wolverine Copper Refrigeration Tubing is as good as a guarantee that that job is right, and your re-servicing troubles are over before they start. That makes it PLENTY SOFT for you.

Wolverine Copper Refrigeration Tubing is used by some of the country's largest manufacturers of refrigerators and refrigeration units, in their own product.

Take a tip from engineers who specify it.

Ask your Jobber for WOLVERINE COPPER TUBING on your next job.

**WOLVERINE TUBE CO.**  
1411 CENTRAL AVENUE  
DETROIT, MICHIGAN

## Commercial Refrigeration Sales by Nema Manufacturers Total 34,980 Units in May; Water Cooler, Ice Cream Cabinet & Beverage Cooler Sales Continue High

The following report of commercial refrigerating and air-conditioning equipment sales for May, 1937, were made to the Commercial Refrigeration Section of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) by the following 15 companies:

Brunner Manufacturing Co., Carrier Engineering Corp., Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigerator Corp., Kelvinator Corp., Leonard Refrigerator Co., Merchast & Evans Co., Norge Corp., Servel, Inc., Uniflow Manufacturing Co., Universal Cooler Corp., Westinghouse Electric & Manufacturing Co., York Ice Machinery Corp.

SALES FOR MAY, 1937								
	Domestic		Canadian		Other Foreign		Total World	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1. Bottle Water Coolers—Complete.....	1,039	\$ 66,656	3	\$ 172	35	\$ 2,783	1,077	\$ 69,611
2. Pressure Water Coolers—Complete.....	3,763	367,873	19	1,890	91	9,262	3,873	379,025
3. Water Coolers—Low Side Only.....	268	14,809	2	119	5	345	275	15,273
4. Ice Cream Cabinets—Complete.....	4,403	694,143	161	17,997	231	24,843	4,795	736,983
5. Ice Cream Holding Cab. Only (Remote).....	561	77,792	7	1,064	59	7,519	62	86,375
6. Bottled Beverage Coolers—Complete.....	6,631	598,391	146	7,811	141	11,548	6,918	617,750
7. Milk Cooling Cabinets (No High Sides).....	301	19,439	.....	.....	9	492	310	19,931
8. Air Conditioners—Self-Contained.....	1,635	333,002	.....	.....	119	27,441	1,754	360,443
9. Air Conditioners—Floor Type (No High Sides).....	422	151,259	.....	.....	28	8,576	450	159,835
10. Air Conditioners—Ceiling (Cooling Only—No High Sides).....	529	86,434	.....	.....	63	8,165	592	94,599
11. Air Conditioners—Ceiling Type (Equipped for Heating—No High Sides)	70	38,104	1	537	1	530	72	39,171
12. Air Conditioners—Residential Type (No High Sides, Boilers, or Furnaces)	32	8,826	.....	.....	16	8,000	48	16,225
13. Condensing Units Less Than 1/2 Hp...	3,798	213,387	12	650	1,649	103,108	5,459	317,145
14. Condensing Units—1/2 Hp.....	3,355	265,437	128	9,509	493	42,040	3,976	316,956
15. Condensing Units—3/4 Hp.....	1,757	181,706	61	6,801	315	34,079	2,133	222,556
16. Condensing Units—1 Hp.....	1,263	173,429	26	3,630	224	32,166	1,513	209,225
17. Condensing Units—1 1/2 Hp.....	1,066	163,243	33	6,222	159	27,803	1,258	197,268
18. Condensing Units—2 Hp.....	507	102,870	15	3,229	79	16,931	601	123,030
19. Condensing Units—3 Hp.....	386	88,209	6	1,269	34	8,291	426	97,769
20. Condensing Units—5 Hp.....	319	94,537	2	465	57	14,771	378	109,773
21. Condensing Units—7 1/2 Hp.....	228	104,408	3	1,415	7	3,184	238	109,007
22. Condensing Units—10 Hp.....	122	80,415	.....	.....	6	3,527	128	85,942
23. Condensing Units—15 Hp.....	102	83,537	1	881	6	4,668	109	94,093
24. Condensing Units—20 Hp.....	113	117,716	.....	.....	2	1,620	115	119,336
25. Condensing Units—25 Hp.....	68	82,637	.....	.....	.....	.....	68	82,637
26. Condensing Units—30 Hp.....	70	105,550	.....	.....	.....	.....	70	105,550
27. Condensing Units—40 Hp.....	37	57,033	.....	.....	1	1,400	38	58,433
28. Condensing Units—50 Hp.....	37	68,465	.....	.....	1	1,600	38	70,065
29. Condensing Units—60 Hp.....	15	27,679	.....	.....	.....	.....	15	27,679
30. Total—Lines 13 to 29, Incl.....	13,248	2,010,258	287	34,071	3,033	295,188	16,563	2,339,517
31. Total—Lines 1, 2, 4, 6, 8, and 30.....	30,714	.....	616	.....	3,650	.....	34,980	.....
32. Commercial Evaporators (Not Reported Above).....	4,571	136,944	399	15,840	1,013	32,509	5,983	185,383
33. Air Conditioning Evaporators (Not Reported Above).....	520	125,275	.....	.....	3	2,805	523	128,081
34. Total Commercial & Air Conditioning.....	.....	\$4,729,206	.....	\$79,501	.....	\$440,096	.....	\$5,248,803

### N. Y. & Pennsylvania Lead in May, 1937 Sales By States

States and Territories	Quantity Household Low Sides
Alabama	3,764
Arizona	981
Arkansas	2,018
California	20,288
Colorado	1,664
Connecticut	4,993
Delaware	844
District of Columbia	2,279
Florida	2,570
Georgia	5,674
Idaho	926
Illinois	27,425
Indiana	9,120
Iowa	4,086
Kansas	3,812
Kentucky	4,618
Louisiana	3,375
Maine	1,333
Maryland	4,136
Massachusetts	10,572
Michigan	17,945
Minnesota	5,979
Mississippi	2,020
Missouri	9,354
Montana	1,218
Nebraska	1,796
Nevada	712
New Hampshire	850
New Jersey	9,871
New Mexico	865
New York	33,390
North Carolina	8,520
North Dakota	472
Ohio	23,952
Oklahoma	2,773
Oregon	1,920
Pennsylvania	29,489
Rhode Island	1,122
South Carolina	3,556
South Dakota	578
Tennessee	5,999
Texas	13,051
Utah	1,343
Vermont	394
Virginia	5,214
Washington	3,113
West Virginia	3,901
Wisconsin	4,910
Wyoming	442
Total United States	309,767
Canada	4,841
Other Foreign (Including U. S. Possessions)	19,261
Total for World	333,869

### Anchor Lite Selling Carload of Crosley Washers Weekly

PITTSBURGH — Since the introduction of the 1938 all-white line of Crosley washers, sales by Anchor Lite Appliance Co., Crosley distributor in this territory, have averaged more than a carload a week, reports Harold W. Goldstein, general manager of the company. This record has been established despite labor troubles in Pittsburgh and adjoining territories, Mr. Goldstein points out.

### 354 Appliances Sold in 1936 By Pennsylvania Utility

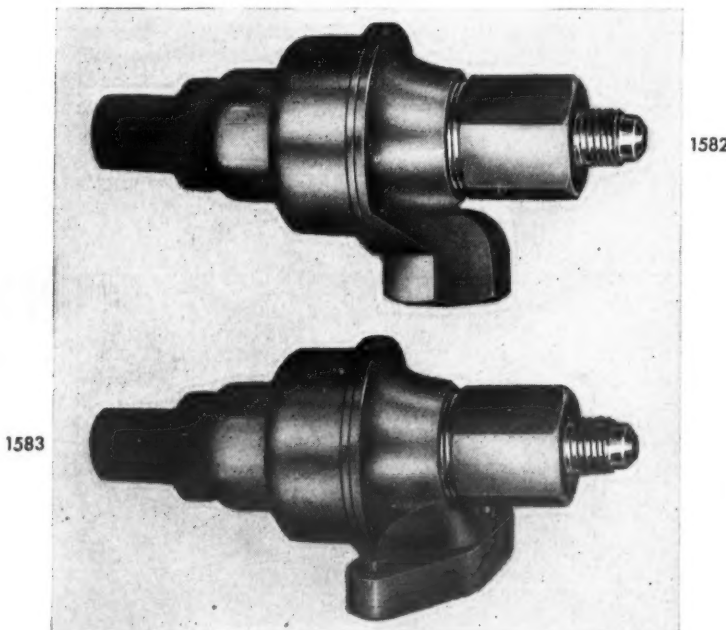
KENNETT SQUARE, Pa.—A total of 354 electrical and 68 gas appliances were sold by the Chester County Light & Power Co. during 1936. The electrical appliance unit total included the sale of 23 refrigerators, 31 ranges, 23 washing machines, 80 irons, and 87 heating appliances.

### STANDARD REFRIGERATING APPLIANCES

## New Valves

SMALL IN SIZE . . .

. . . BIG IN PERFORMANCE



TYPE "F"

### AUTOMATIC EXPANSION VALVES

These valves are especially designed for the smaller units—domestic cabinets—beverage coolers—water coolers—room coolers—ice cream cabinets. Bodies of these valves are hot pressed die forgings, close grained and non-porous. The springs are extra length for smooth, velvety adjustments. Needles are special alloy, adaptable for any refrigerants. The breather cap is of live rubber with threaded metal insert. And these are just a few of the many outstanding construction features of these superior valves. No. 1582, 1/4" S. A. E. inlet—1/4" F. P. T. outlet. No. 1583, 1/4" S.A.E. inlet—1 1/4" bolt centers. Type "F" valves are interchangeable with all refrigerants except ammonia.

Write for bulletins on the complete line of Blue Ribbon Appliances.

**AMERICAN INJECTOR COMPANY**  
RILEY ENGINEERING CORP. Associate  
1481-14TH ST. • PHONES LAFAYETTE 0350-0552 • DETROIT, MICH.



## COMMERCIAL NEWS

### Mono-rail Top, Woven-Wire Partitions Are Features of 1937 Kelvinator Beer Coolers

DETROIT — Operating economy, "sales creating" appearance, and accurate temperature control are sales features which Kelvinator claims for its 1937 model beer cooler, which has capacity of 250 bottles or cans of beer.

Design of the cooler was made after a survey of beer retailers, and includes several specifications suggested by them, says A. H. Reinach, sales manager of Kelvinator's standard commercial and liquid cooling department.

These specifications, according to Mr. Reinach, included a heavy-duty compressor unit to maintain uniform temperature, extra-heavy insulation, improved crown-puller, provision for easier cleaning, better appearance, and sturdy construction.

The 1937 Kelvinator beer cooler has a newly designed mono-rail top,

which permits easy access and finger-touch control for opening and closing lids easily. This is said to eliminate the need for extra overhead space required by other types of cabinet tops, in addition to making each compartment easily accessible.

For easy cleaning, woven-wire partitions have been designed to divide the cooler into four compartments, enabling dealers to keep brands separate. Concealed crown-puller may be placed on the cabinet front or mounted at either end of the cooler. Crown receptor has a new large capacity.

Extra-heavy insulation, asphalt-treated and completely sealed, is used in the cooler, together with the regular Kelvinator compressor, to keep controlled temperatures at all times. Appearance of the unit has been improved with modern design and chrome-plated hardware.

### Four Booklets Describe Armstrong Insulation

LANCASTER, Pa.—Three folders, one each on LK corkboard, Temlock, and Armstrong-Corning wool, have just been issued by Armstrong Cork Products Co. describing that company's line of insulation materials.

A fourth booklet summarizes the features of the three products and contains information on Armstrong's "life test room."

This test room is available to manufacturers who use Armstrong insulation or are interested in making efficiency tests.

### 4 New Distributors Named by McCray

KENDALLVILLE, Ind. — McCray Refrigerator Co. announces the following distributor appointments: W. T. Rightmire, Los Angeles; O. A. Olin, San Francisco; Robert K. Pepple, Lansing, Mich.; and Stanley E. Mowry, Binghamton, N. Y.

### A Commercial Refrigerator Goes to Jail in Miami

MIAMI—As the result of a recent newspaper expose in Miami a commercial refrigerator has gone to jail.

The newspaper reported that inspectors had found conditions at the Miami Prison farm such that the old refrigerator equipment had to be condemned. The condition was played up as a public scandal, arousing the irate citizenry.

Ragon-Lyle, Inc., McCray distributor at Miami, immediately contacted the city fathers, who quickly purchased the McCray installation.

The order called for an AD-3075 left hand cooler, complete with coil, valve and refrigerating machine.

"Strangely enough," reports Ragon-Lyle, "no other firm approached the city in an effort to sell it."

### 75% of Southern Dairies Have Refrigeration

MONTGOMERY, Ala. — Seventy-five per cent of southern dairies are now equipped with refrigeration, whereas 10 years ago less than 5% had this facility, reports the Acme Feed & Fuel Co., General Refrigeration Sales Co. distributors in this city.

Pioneer dairy outfitters, the company has installed refrigeration equipment in 35 dairies in the Montgomery territory in the past two years. Ethyl chloride equipment is replacing the ammonia type machines in many installations, the company reports.

### Century System Used in Hershey Creamery Trucks

HARRISBURG, Pa.—The Hershey Creamery Co., ice cream manufacturing firm here, recently added nine mechanically refrigerated trucks to its dispensing fleet.

Eight of the refrigerated bodies are of the conventional straight truck types, and one is a large transport trailer body with a capacity for carrying 3,000 gallons of ice cream.

A Century Whitaker-Upp automatic power system supplies electricity for the truck type air-cooled condensing unit for these trucks. Fin coil evaporators are employed in the new truck bodies, six of which were built by the Meyer Body Co. of Buffalo, and three by the Swab Wagon Works of Elizabethville, Pa.

### Bonney Forge Makes New Line of Screw Drivers

ALLENTOWN, Pa.—A new line of screw drivers to fit all sizes of Phillips screws is being manufactured by Bonney Forge & Tool Works. Blades are of drop-forged, tempered steel.

### Peerless Issues 25th Anniversary Catalog

CHICAGO — Peerless of America, Inc. has recently issued a twenty-fifth anniversary catalog, listing its complete line of air-conditioning products.

Described in the catalog are the Peerless line of comfort cooler units, floor-type units, and ceiling-type units; coil "cores" for use in central type conditioning systems; and Peerless expansion valves, heat-exchangers, and evaporative condensers.

The company's "rifled" fin coils, off-center coils, and freezer coils are also shown and their use explained.

### King Boris Orders Crosley Koldrink Bottle Cooler

CINCINNATI—An order for a Crosley Koldrink bottle cooler placed by King Boris of Bulgaria has just been received from Ing. K. Jontscheff, Crosley distributor of Sofia, Bulgaria, reports Albert G. Lindsay, manager of Crosley's foreign division.

The Koldrink will be used for cooling drinks in the royal palace.



**Anaconda Copper**  
REFRIGERATION TUBES  
*Unusually Soft!*  
THE AMERICAN BRASS CO.  
FRENCH SMALL TUBE Branch  
General Offices: Waterbury, Conn.

## VACATION TIME . . .

July! August! Everyone's thoughts turn to a much-needed rest in the cool north woods. Yet—Serval commercial refrigerating machines ask no summer vacation—demand no relief from hot weather. They stay on the job—work day and night—prove their traditional ability to "take it" even in the most extreme climate and under the most severe operating conditions.

Serval dealers can enjoy carefree vacations, happy in the knowledge that their installations won't require rush service calls—that there will be no deluge of summer complaints.

For those who cannot vacation in the north woods, Serval Air Conditioning provides clean, refreshing air in homes and offices.

SERVEL, INC., Electric Refrigeration and Air Conditioning Division, EVANSVILLE, IND.

## SERVEL

Commercial Refrigeration and Air Conditioning

## CONDENSERS . . . EVAPORATORS

The dependability of 33 years specialized experience is back of Long condensers and evaporators (domestic and commercial) for electric refrigeration and air conditioning applications. Complete experienced engineering cooperation available • Long Mfg. Division Borg-Warner Corporation—Detroit, Michigan & Windsor, Canada

# LONG



## AIR CONDITIONING AND REFRIGERATION NEWS

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### A Planned Society

A planned society can only come under a dictatorship where human beings are shot if they have ideas contrary to those of the dictator. As long as men are allowed to think for themselves, to dream their own thoughts, to use their own initiative and courage, human society will forever be in a state of flux.—Malcolm Bingray, in the Detroit Free Press.

### The Industry Girds For Action

READING last week's issue of AIR CONDITIONING AND REFRIGERATION NEWS, one could not help but be struck with the number of news items pertaining to expansion. New factories, new warehouses, and personnel appointments were announced in an unusually large number.

Editors of the NEWS recalled that announcements of this type are rarely made in the summer. Rather, they generally come in late autumn. This year, it would appear, the industry is getting set for action much earlier than is customary.

### Outside Services Being Called in for Consultation

New talent is being hired, men are being shifted to other spots. Moreover, outside services—like advertising agencies and sales promotion and merchandising consultants—are being called in by manufacturers.

Behind all this activity is the belief that next year will be even bigger for the refrigeration and electrical appliance industries than 1937. And prospects for a big gain in air-conditioning business are very good, indeed.

So, individual manufacturers are wasting no time in getting to work on promotional plans, and in adding to production facilities. Take a quick look at some of this expansion news:

Most dramatic new entry into the home appliance field is the recently formed Bendix Home Appliance Co., with its manufacturing plant in South Bend, Ind.,

and sales and administrative headquarters in Detroit. This company is starting out with every intention—and with the necessary financial backing—to become a major factor in the field.

### Additions to Production Facilities Announced

Several manufacturers have announced construction, or plans for construction, of new plants or additions: Inland Mfg. division of General Motors Corp. is planning construction of an eastern service plant near Linden, N. J.; Midwest Stamping & Enameling Co. has announced plans for three new buildings and remodeling of present facilities at its plant in Galesburg, Ill.; Crosley Radio Corp. is building a refrigerator cabinet factory at Richmond, Ind.

Carrier Corp. has announced purchase of the Franklin Automobile Co. plant at Syracuse, N. Y., and intends to concentrate all its activities there.

C.I.T. Corp., finance company, has opened new offices in Decatur, Ala., and Asbury Park, N. J.

Westinghouse Electric & Mfg. Co. has opened a new distribution center in Huntington, W. Va.

### New Distributors Appointed Early

The following manufacturers have appointed new distributors in the cities mentioned: Apex Electrical Mfg. Co.—Huntington, W. Va.; Middletown, Ohio, and New York City; Norge Corp.—Jacksonville, Fla.; Servel, Inc.—Sacramento, Calif.; General Electric Co.—Detroit; Mercoid Corp.—Oklahoma City; Copeland Refrigeration Corp.—South Bend, Ind.

Climax Machinery Co. has announced appointment of six new distributors.

Kingston & McDonald, Lipman distributor in New York state, has opened a new branch at Massena, N. Y. R. P. McDavid Co., Alabama Kelvinator distributor, has doubled the size of its old quarters.

Personnel changes and additions have been as numerous as plant alteration and construction.

Harry Alter, a former distributor, has been elected president of General Household Utilities Co., which is experimenting with a new form of non-electric refrigeration for farms. Three district representatives have been appointed by Mills Novelty Co.'s commercial refrigeration division. Armstrong Cork Co. has announced three personnel changes.

H. F. Boe has been appointed commercial manager of Westinghouse Electric & Mfg. Co.; Ben L. Boalt was named vice president of Perfex Controls Co.; G. T. Long is now head of Carrier Corp.'s residential air-conditioning department.

W. F. Armstrong has been appointed vice president of Nash-Kelvinator Corp. E. B. Newill and S. M. Schweller have moved to higher positions at Frigidaire Corp. Frank Gleason has resigned his post with the jobbers association to join Brunner Mfg. Co.

Arch Black has joined the Norge export division, G. Vincent Butler has been appointed director of sales for Carrier's international division, Frank O. Graham has been named chief engineer of Temprite Products Corp., and Robert H. Luscombe has been appointed sales manager of Penn Electric Switch Co.

Three personnel changes have

been made at Universal Cooler Corp. and at Mercoid Corp.; Apex Electrical Mfg. Co. has added two men to its national sales staff. Don Crosby has been named manager of the radio division of Crosley Radio Corp.

W-M Refrigeration Co., manufacturer's agent for Copeland in Milwaukee, has added Frank Best as state dealer contact man. Harry S. MacCubbin has been appointed Philadelphia district representative for the G-E's home bureau division. William Rinehart has succeeded George Bertke in charge of Kelvinator sales for the Dayton branch of Graybar Electric Co., and W. A. Stevens has been appointed service and engineering manager of Kelvinator's Baltimore branch.

### Expect National Income And Outgo to Rise in 1938

Conferences with manufacturing executives reveal that this flock of expansion news is no mere coincidence. Some manufacturers feel that they didn't get their "fair share" of the 1936 refrigeration volume. Others are anxious to become real factors in the washing machine and range business. Everybody feels that national income will be greater, national spending higher, in 1938.

Feeling is also general that 1938 models of all appliances will be announced early in the fall of this year.

### Higher Costs Will Cause Higher Retail Prices

Only fly in the ointment is rising material costs. Motors are up a dollar a unit. Steel has risen. Controls, valves, fittings, hardware, and some types of insulation are more costly. Wages for labor are higher. All this, of course, will be reflected in retail prices.

Whether or not higher retail prices will react against volume remains to be seen. But that manufacturing executives as a whole are not much worried is a fact reflected in recent news of plant and personnel expansion.

## QUOTED

### American Business

(One of a series of "Industry Talks" prepared by the Bureau of Research and Education, Advertising Federation of America.)

WE all have our stake in Business. There may be a hermit, living in a cave somewhere, who gets along without a knife, or cooking pot, or matches, or any other products of civilization. But aside from him, there is scarcely anyone in this country whose welfare does not depend directly upon the processes of business. No matter where you get your income, every dollar of it was produced by some form of industry.

Economic prosperity exists when business functions smoothly and efficiently. Through all its ups and downs of the past 150 years, the American industrial system has achieved marvelous results. Each generation sees greater progress than the last.

The living conditions of American workers are now far higher than anywhere else in the world, and are ascending more rapidly than ever before.

In many ways, the average farmer or factory worker is better off today than were the aristocrats of only a century ago. His wages will buy twice the comforts his parents enjoyed, and his working hours are shorter.

Yet, if a visitor from Mars had listened to some of our recent political debates, he might have concluded that our economic system has failed, and that business as now conducted is an obstacle to social progress.

That is the tenor of many arguments we hear nowadays. It is time that the people give careful thought

to these matters and critically examine every proposal that would restrain business initiative and possibly cripple the forces of industrial progress.

Every substantial advance that was ever made in industry came through individual initiative and the desire for personal achievement. All the material riches of the world and all the inventive brains of mankind would have failed to bring the material progress of the past century in America, were it not for the driving spirit of private enterprise.

Such progress is possible only in a free country where the poorest boy can rise to fame and riches by building an industry to benefit millions besides himself.

This is a land of competition. American industry was virtually built by competitive effort. When competition is stifled, progress is dead. One of the cardinal principles of our industrial system is private competition. Better products, higher wages, and lower prices are all fruits of healthy business competition.

Never before, in all the history of the world, have the benefits of scientific discovery and invention been given to the public as fast as now. Under the pressure of unhampered competition, every industry strives to give more and better products to its customers.

Through the medium of advertising, business keeps the public informed of industry's progress and stimulates wider distribution of its products.

Thus are created economic prosperity and wider spread of wealth. Living standards and social welfare depend directly upon the success of business and industry in attaining their objectives.

The American system of private enterprise is responsible for what we have accomplished in the past, and that past is but a threshold to what lies ahead.

## LETTERS

### Tahiti in a Nutshell —But Copra Isn't

Kelvinator  
Division of Nash-Kelvinator Corp.  
14250 Plymouth Rd.  
Detroit, Mich.

Editor:

Have just finished reading the very interesting discourse on the "Tropical Paradise of Tahiti" written by George Christensen, and published in the June 30 issue of AIR CONDITIONING AND REFRIGERATION NEWS.

While the story itself is true, I do believe that an exception must be taken to the caption to the photographic illustration shown on page 7, which reads: "the dried shells of which (copra) are Tahiti's leading item of export."

The caption is incorrect, as it is not the shells that are used, but the meat substance of the coconut is removed from the shells, dried and then exported for the manufacture of coconut oil and numerous by-products. The error is not a great one, nor is it a damaging one, but to a person who might be interested in the tropical islands, it might be somewhat confusing.

All the stories that you have written on your "Around the World" cruise were filled with much interesting reading, and they fairly took a person right on the trip with you.

PETER FICKER

### Queen's County Dealers Plan to Organize

137-28 Northern Blvd.  
Flushing, N. Y.  
July 17, 1937.

Editor:

I have seen two of your issues dated June 30, 1937, and July 7, 1937, respectively, called AIR CONDITIONING AND REFRIGERATION NEWS.

I am forming an organization of Electrical Appliance Merchants in Queens County, City of New York, State of New York, and I would appreciate it if you can forward to me the two aforesaid issues.

I trust that you will give this matter your attention as I would like to submit same at the next meeting.

JOSEPH LUBIN.

### Sensible Classifications

Viking Air Conditioning Corp.  
Manufacturers of Air Circulation Equipment  
Main & Center St., N. W.  
Cleveland, Ohio

Sirs:

Your recent issue of the Comfort Cooling Guide received in the office is very nice indeed. The classifications are the most sensible I have seen yet and its presentation in a small convenient size should certainly insure general use.

MARION I. LEVY

### Sees Possibilities for Industry in India

K. N. Ghose

82 Beaver St., New York City

Sirs:

Enclosed please find check for \$5 for one year's subscription to the AIR CONDITIONING AND REFRIGERATION NEWS and one copy each of 1937 Household Refrigeration Specifications and Air Conditioning Surveys.

I would like to have a few copies of your back numbers. The ones I am interested in are Mr. Taubeneck's articles about India which appeared in your issues of last July and also the issues in which the instalments of Air Conditioning Made Easy were published. Will you kindly quote me a price for the above back issues.

If Mr. Taubeneck has not returned from his trip, will you let me know when he is expected in New York as I would very much like to meet him. His articles on India were of very much interest to me and I am planning to get into the refrigeration and air conditioning field and return to India.

I am a qualified electrical and mechanical engineer with my training completed in England but for some years I have been in this country representing Calcutta houses for jute and burlap. I see great possibilities in the refrigeration and air conditioning field in India.

But the East is slow and one cannot hurry them. There are quite a few wealthy men in India and if they could be persuaded to have confidence in all the comfort that conditioned rooms are supposed to give, we will have the same story about the Smiths and Jones all over India. And there are the immense possibilities for the application of refrigeration in the food lines and in restaurants, hotels and clubs, and the steamer trains between Calcutta and Bombay.

I know about the shortage of technical men in this country and under such circumstances the manufacturers can ill spare any one to go to distant India which buys hardly 400 refrigerators a month for a country with 350 million people sweltering in heat. Mr. Taubeneck must be in close touch with the industry here and I would very much like to meet him the next time he visits New York.

K. N. GHOSE

### Contributions from Dealers are Welcomed

63 Northumberland St.  
Guelph, Ont., Canada

Editor:

Having established a sales and service of my own, will you please forward my News to 63 Northumberland St., Guelph, Ontario.

I have in my possession a snap showing a Frigidaire motor being conveyed to a higher altitude on a cork slab during the flood in Wheeling, W. Va., in January, 1937. Does your paper ever publish such items of interest?

HARVEY F. PULLIN.

Answer: The NEWS is always pleased to receive editorial contributions from subscribers. But please don't wait six months after an event to send us an account or picture of it.

### Word of a New Jobber

The Daniel Boone  
Charleston, W. Va.

Sirs:

Please send pamphlets on Mr. Newcum's Manuals Nos. 1, 2, and 3. I want to pass them on to embryo service men.

For your information the Piedmont Distribution, Inc., of 307 South Davis St., Greensboro, N. C., are anticipating going into the refrigeration service parts business. This might be of interest to some of your parts advertisers.

W. O. NANGLE,  
Field Service Engineer, Grunow.

### Disappointed

Avon Hardware Corp.  
Avon, N. Y.

Editor:

We have just recently received your publication of the specifications of 243 models of refrigerators, and are very much disappointed to find you have left out the thickness of insulation on all makes.

This was a great asset to us and we would like to see it continued.

C. E. MEEKIN

### Here's An Opportunity For a Big Job

E. A. Janke Co.  
Monroe, Wis.

Sirs:

We are very much interested in receiving some information on the construction of a two to three-story cold storage plant of approximately 50 x 100 feet, ground size.

Consequently, we would be very much interested in receiving any information or plans which you might have or might be able to refer us to with reference to refrigeration and cold storage construction of the most modern type.

E. A. JANKE.



# THE AIR AGE

BY F. O. JORDAN

## A California Slant On Attic Fans

University of California  
Agricultural Experiment Station  
Division of Agricultural Engineering  
Davis, Calif.  
Air Conditioning Editor:

Permit me to commend you upon the viewpoint expressed in your article on June 2, "Attic Fan Cooling." Fortunately much of our climate is particularly suited to this type of installation.

I enclose for your interest and information, a copy of a mimeograph "Methods of Improving Summer Living Comfort," which we prepared this spring, anticipating that we would be swamped with requests for information on low cost methods of providing some degree of summer comfort in rural dwellings.

This supplements Bulletin No. 589 "Air Conditioning for California Homes," which was prepared in 1935 by B. M. Woods and B. F. Raber.

R. L. PERRY

**Answer:** The paper referred to in the above letter describes various methods of comfort cooling applicable to California's peculiar and admittedly delightful climate in general.

These methods are described in the following quotations taken from the paper. The remainder of the paper is devoted to further discussion of these methods.

We hope soon to publish a more complete digest of this interesting paper.

**"Comfort Conditions:** As shown by the chart, 98% of the people tested were comfortable with the surrounding air ranging from 73° F. and 70% relative humidity to 79° F. and 30% relative humidity. About 50% of those tested were still comfortable when 79° F. at 70% relative humidity, and 85° F. and 30% relative humidity were reached.

**"Comfort cooling** can be accomplished in most parts of California, by several simple methods. Circulation of night air, is effective where night temperatures are low. Evaporative cooling, can be applied where humidity is not too high.

**"In houses with large basements,** cool air from below can be circulated through the house during the afternoon. These methods can be installed in conjunction with a warm air furnace designed for fan circulation of air. Under extreme conditions (even in California) mechanical refrigeration or dehumidification must be resorted to.

**"Thermal Insulation:** Insulation is of major help in comfort cooling. Although it is difficult to insulate the

walls of existing homes, the roof or top floor ceiling is usually accessible. It has been found that more than 40% of the heat which enters an uninsulated single story house comes through the roof.

**"Two-thirds or more of the roof** heat absorption can be prevented at a cost of 5 to 7 cents per square foot, about \$50 to \$70 for a five room cottage. Fortunately the savings which result from lower winter fuel consumption will repay this cost in a few years in most cases.

**"Night Air Cooling:** For cooling the house at night by ventilating with cold night air, the fan can be placed either in the attic, or to draw air from the basement. If the top floor ceiling is uninsulated, it may be desirable to arrange the fan for circulating outside air through the attic during hot afternoons. The cellar fan can be used during the afternoon if the basement is large enough to serve as a 'cold reservoir.'

**"This fan will also replace the** warm air in the rooms with cold outside night air which passes through the basement first. The capacity of these fans should be large enough to change the air in the house at least once in three minutes. For quiet operation, large, low speed fans are desirable, and cost less to operate, although the first cost is higher.

**"Evaporative Coolers:** Thousands of homemade evaporative cooling units have been installed in the past few years in regions having dry summers. Even in the Imperial Valley the method gives reasonably satisfactory results during much of the hot season.

**"The method of operation is to** expose a large water surface for evaporation into the stream of air which is delivered into the house. The surface is commonly secured by trickling water over a pad of loosely packed material such as excelsior.

**"Pads about 2 inches thick, held** between hardware cloth screens, are placed on one or more sides of a fan box, which is set to deliver air through a window opening on a shaded side of the building.

**"Indirect Evaporative Cooling:** To reduce the amount of water used, water for tube-and-fin coolers can be recirculated over a cooling tower which recools the water by evaporation. However, cooling tower tem-

**TEMPRITE**  
INSTANTANEOUS  
BEER and WATER COOLERS  
Detroit Michigan

## Dependable Compressors for AIR CONDITIONING

When you install air conditioning equipment use M & E Compressors... get the plus values these units offer in dependability and operating economy. Such features as forced lubrication, automatic belt-tightener, counter-balanced Molybdenum Steel crankshaft, self-cleaning continuous fin type counter-flow condenser, sound absorbing, rugged, cast base, etc., insure long, trouble-free life, low maintenance and smooth, quiet operation. Ask for complete information.



M & E COMPRESSOR UNIT A-24000 WF  
4-cylinder, 15 h.p., water-cooled unit for heavy duty refrigeration and air conditioning service.

**M & E**  
EST. 1865

**MERCHANT & EVANS CO. PHILA., PA. U.S.A.**  
PLANT AT LANCASTER, PA.

peratures cannot readily be brought lower than within 5° F. of the wet bulb temperature, which means that the water will be too warm for use in tube-and-fin coolers during many afternoons.

**"Ice Water Cooling:** Where water cooling would be feasible on all except a few days, ice cooling can be used as a supplement on the extreme days. The additional equipment required is simple, but the cost of ice will be high if it is used many days, particularly in uninsulated homes.

**"Mechanical Refrigeration and Dehumidification:** In regions where high temperatures accompanied by high humidities are encountered, giving wet bulb temperatures over 77-80° F., mechanical refrigeration or chemical dehumidification is necessary to comfort cooling."

Well known the world over is California's climate. Some people even suspect that the word "climate" was coined in California, and there can be no doubt that "native sons" have done their part toward publicizing this pleasant word.

The quotation regarding the value of "thermal insulation" in keeping out the sun's midday heat is interesting, because this form of cooling has no operating cost after it is installed.

For the manufacturer and dealer of mechanical refrigeration equipment for air conditioning, it is interesting to note that even in that pleasant land beyond the Rockies which fares so well with the Gods of Climate, there is a place for their product as evidenced by the last paragraph quoted above.

Now let's hear from some climates not so golden.

## The Principle of Small High-Velocity Ducts

W. J. Strandwitz & Co., Inc.  
537-49 South Second St.  
Camden, N. J.

Air Conditioning Editor:

I am very much interested in both the theoretical and practical applications of the theory stressed by you in the AIR CONDITIONING AND REFRIGERATION NEWS of June 9. I am especially interested in the application of this system to residential air-conditioning work.

I am anxious to get any material that you have on this work to help me.

ROBERT T. STRANDWITZ

**Answer:** Regarding the cutting of size and cost of air-conditioning ductwork, the method referred to in the article in the June 9 issue of AIR CONDITIONING AND REFRIGERATION NEWS is to pass only the outside air required for ventilation through the air supply fan and to deliver this air to the various rooms through high velocity jets in such a way that a sufficient volume of secondary air is aspirated from the room and circulated through the air-conditioning coil as necessary to deliver the required tonnage.

A good example of this arrangement is the 1937 Carrier self-contained air conditioner, in which the circulating fan forces about 25% of the total air required by the coil into the air passage to the coil through several small jets.

This primary air aspirates about three times as much room air as is passed through the jets, and the whole quantity is delivered to the air-conditioning coil to be treated and delivered to the room.

When applied to the central system, the arrangement is to distribute the outside air required for ventilation through small ducts to the various rooms. Inside each room are located the air-conditioning coil and jets through which the outside or primary air is forced to aspirate secondary air from the room and deliver both primary and secondary air through the conditioner.

For example, if 400 c.f.m. per ton is required to carry the load, and 100 c.f.m. per ton of outside air is required for ventilation, it is necessary for the fan to handle only the 100 c.f.m. per ton and deliver it through small ducts to the air conditioners (which are provided with fans), where 300 c.f.m. per ton is aspirated from the room, and the entire 400 c.f.m. per ton is passed through the conditioner as required.

The obvious advantages are the much smaller duct and fan sizes, and the centralization of mechanical and electrical equipment.

Generally for the residence, the duct sizes will be from 3-inch to 5-inch tubing of eight gauge.

Obviously, the static pressure within the duct system will be several times as great as is customary in the conventional system, so that no great saving in fan power is to be expected.

However, there is a saving in fan and duct costs, and all mechanical and electrical equipment is confined to one easily accessible location. Furthermore, there is a decided advantage in the use of small ducts, especially in the installation for an existing building where openings must be cut and space found for ductwork.

## GENERAL ELECTRIC ENGINEERS SELECT CELOTEX



The new General Electric Bottle Cooler—Model TM33

**Low operating costs assured and permanent insulation provided by Celotex in new G. E. Bottle Coolers**

FOR eye appeal, the new General Electric beverage cooler was designed by one of America's foremost industrial stylists. For positive assurance of longer service and lower operating costs, it was insulated with Celotex Low Density Refrigerator Insulating Board.

General Electric engineers knew they'd be safe in insulating with Celotex—because the lasting insulating efficiency Celotex provides has been proved by years of service in thousands of refrigerators, bottle coolers, commercial cases, and cold storage plants.

Celotex insulates and provides structural strength at one low cost—stiffens the steel exterior and

interior. It fits tight, affords unbroken insulation in every corner, and stays put—can't shift or settle to leave any part of the cabinet unprotected from heat leakage. It is odorless and sterilized—protected from termites, dry rot and fungus growth by the exclusive Ferox process.

Another reason why so many leading refrigerator manufacturers use Celotex is lower assembly cost. Celotex can be furnished in special shapes and forms pre-fabricated to fit any cabinet designs, however complicated.

For suggestions on any kind of refrigeration insulating problems, write our refrigerator engineers any time, without obligation.

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BRAND—INSULATING CANE BOARD  
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## REFRIGERATION INSULATION

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## SERVICE METHODS

### Capacity Data for Converting Water-Cooled Units to Air-Cooled Machines

BY K. M. NEWCUM

Duval Refrigeration Service  
1330 Forest St.  
Jacksonville, Fla.

Editor:

In June 30 issue of the NEWS (received and of course read today) Mr. Newcum invites suggested topics for discussion in the service column.

Here is something we have never found any data on.

In the last few years, we have concerned ourselves with our customers' water bills, on water-cooled condensing units. The water cost is high in Florida, namely because of the high average city water temperature. It averages around 84°.

As a result of this high temperature, large quantities of condensing water are required to maintain suitably low operating head pressures. The customer is always faced with a big water bill, even though his water-cooled refrigeration system may be small.

This condition has prompted us to convert several water-cooled condensing units to air cooled.

Will you furnish us with a table giving the required square footage of radiating surface, by hp., for various condensing medium (air) temperatures, so that we can select the proper air-cooled condensers to make these conversions, for each (hp.) size condensing unit?

Could you also advise the proper amount of fan required for installation on the motor pulley to be used in conjunction with the air-cooled condensers? This information should include diameter in inches, pitch, and how it is figured. Also cubic feet of air required per minute (c.f.m.). Can we determine c.f.m. from fan measurements?

It might also interest other service men to know that many of our conversion jobs are accompanied by the sale and installation of a new evaporator, and often a new pressure or temperature control. This makes the job very interesting as well as profitable. R. R. STORY

Answer: Converting water-cooled condensing units to air-cooled has

proved very practical where proper ventilation is provided.

Old style air-cooled condensing units, originally equipped with a plain (bare) tube condenser also offers a market for conversion, by replacing the old condenser and fan with a new radiator-type condenser of the proper capacity.

In answer to your first question, we offer table 1—which gives by hp. the size of air-cooled condensers recommended by Fedders Mfg. Co., Buffalo, N. Y. This table and others appear in the condenser section of Fedders catalogue.

Other manufacturers of condensers, such as Long Mfg. Co., Detroit, Mich.; Bush Mfg. Co., Hartford, Conn.; McCord Radiator & Mfg. Co., Detroit; Rome-Turney Radiator Co., Rome, N. Y.; and Trenton Auto Radiator Works, Trenton, N. J., have developed standard data on the capacities and recommended hp. for the condensers they manufacture, which may be obtained upon request.

Also are included charts Nos. 1, 2, and 3 prepared by Fedders, giving the approximate operating head pressure for air-cooled condensing units, using SO<sub>2</sub>, methyl chloride, and Freon-12, respectively.

Charts 1, 2, and 3 clearly indicate the effect of the suction pressure on the operating head pressure at variable cooling air temperatures.

The data on these charts are for average conditions. Experienced service men are familiar with the effect of dirty condensers, air in the system, insufficient cooling air (ventilation) etc., upon operating head pressures.

To answer fully your second question regarding fan requirements such as diameter in inches, pitch and how to figure c.f.m. from fan measurements etc., would involve considerable engineering work which this column intends to avoid, if possible.

Reducing this question down to practical terms the approximate c.f.m. required per horse power may be determined as follows:

For a 10° air temperature rise through the condenser, multiply the horsepower x 900. For a 15° air temperature rise through the condenser, multiply the horsepower by 600. Example 1: 1 hp. x 900=900 c.f.m. for 10° rise.

Example 2: ¾ hp. x 600=450 c.f.m. for 15° rise.

The above gives the approximate c.f.m. requirement. The size of a fan does not always determine its c.f.m., as too many other conditions affect this capacity.

Table 1—Recommendations for Air-Cooled Condenser Sizes

High Side Size for which Condenser is Recommended	1/2 Hp.	1/2 Hp.	1/2 Hp.	3/4 Hp.	1 Hp.
Model No. ....	P-260	P-280	P-320	P-360	P-400
Number of Tubes ....	26	28	32	36	40
Sq. Ft. Radiating Surface ....	23.2	26.72	57.15	64.30	71.42
Inlet Connection ....	1/4 Pipe Tap	1/4 Pipe Tap	3/8 Pipe Tap	3/8 Pipe Tap	3/8 Pipe Tap
Outlet Connection ....	1/4 Pipe Tap	1/4 Pipe Tap	3/8 Pipe Tap	3/8 Pipe Tap	3/8 Pipe Tap

High Side Size for which Condenser is Recommended	1 Hp.	1 1/2 Hp.	2 Hp.
Model No. ....	P-402	P-440	P-480
Number of Tubes ....	40	44	48
Sq. Ft. Radiating Surface ....	93.82	103.0	112.0
Inlet Connection ....	3/8 Pipe Tap	3/8 Pipe Tap	3/8 Pipe Tap
Outlet Connection ....	3/8 Pipe Tap	3/8 Pipe Tap	3/8 Pipe Tap

It is suggested that you furnish your supply jobber or a fan manufacturer with the conditions involved, and the c.f.m. requirement and they in turn will recommend the proper fan for the particular job.

The average condenser capacity rating is based upon a face velocity of from 400 to 500 c.f.m.

#### COMBINATION WATER AND AIR-COOLED UNITS

Converting water-cooled condensing units to air-cooled units may decrease peak load capacities.

Condensing units designed for 85° condensing water, converted to air cooled, may not be expected to produce the same refrigerating effect with 95° to 100° air.

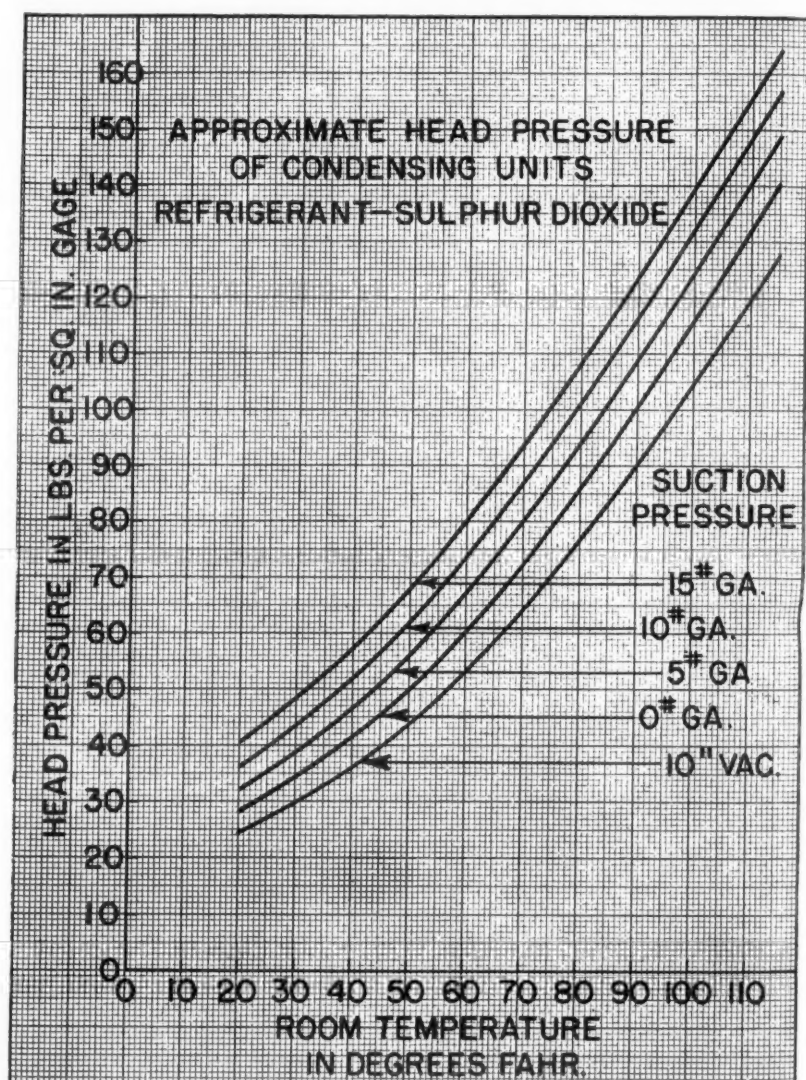
Water temperatures may rise as high as 85° in some localities, but in a locality having an 85° water temperature the air temperature will invariably exceed this temperature by at least 15° during hot weather.

This higher air temperature will effect a correspondingly higher operating head pressure. The higher head pressure in turn results in a corresponding decrease in condensing unit efficiency.

A successful conversion may be made, where an air-cooled condenser and fan of the proper capacity are added to the water-cooled unit. This is known as a combination air-and-water-cooled system.

(Concluded on Page 13, Column 1)

Fig. 1—Head Pressures for SO<sub>2</sub> Systems



## BUNDY TUBING

**B**UNDYWELD TUBING provides the ideal combination of workable properties with great strength and resistance to both vibration fatigue and high temperatures. It is rolled from copper-coated steel and is copper finished on both inside and outside surfaces. It is furnished in a wide range of sizes and is adaptable to practically any use where great strength and resistance to vibration are desirable. We will gladly quote from your blue-prints or samples.



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DETROIT

### FOR SERVICING ICE CREAM CABINETS AND DAIRY COOLERS

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(DU PONT METHYL CHLORIDE)

### PURITY . . . LOW MOISTURE LOW ACIDITY GUARANTEED

IT'S the Methyl Chloride used by leading manufacturers for the original charge. In recharging the Methyl system it's safer to use ARTIC because of its guaranteed purity, low acidity and low moisture content. You can depend on its uniform quality. Easy to get on short notice because it's

stocked in standard containers in principal cities.

ARTIC is widely used for ice cream and dairy work because it is the dependable, quick-cooling and quick-freezing refrigerant, operating efficiently at positive pressure to give controlled low temperatures.



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Artic—THE PREFERRED METHYL CHLORIDE FOR SERVICE WORK



## Data for Converting Water-Cooled Units to Air-Cooled Jobs

(Concluded from Page 12, Column 5)

The air-cooled condenser and fan are installed as usual, but the water-cooled condenser, receiver, water valve, water connections etc., are left intact.

The only change made in the water-cooled part of the system is that the water valve is adjusted to open at what is determined to be slightly above desired maximum operating head pressures.

The effect of this combination is that during all normal temperature and load conditions the water valve remains closed and the system operates as air cooled.

When high cooling air temperatures and consequent excessive head pressures exist, the condensing unit is required to handle this excess load. Its capacity is limited with only air for cooling.

With this combination the water valve opens, allowing just a sufficient amount of water to flow through the water-cooled condenser, to level the head pressure down to within desired maximum limits.

When conditions return to normal the water valve will close and system operate as air cooled.

Water is used only during peak load periods and then only in small quantities. This combination provides

assurance of adequate capacity under peak conditions, at very low water cost.

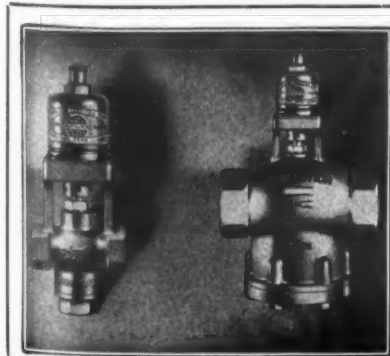
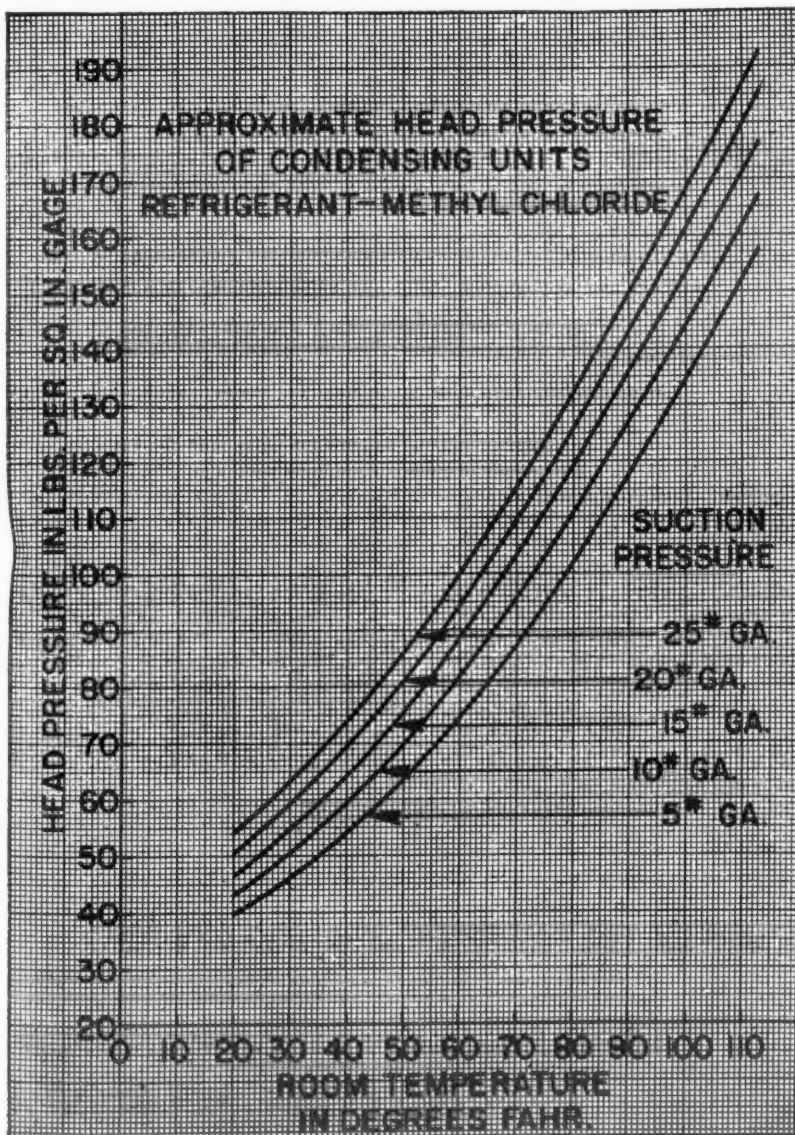
For this high water bill problem, particularly on larger water-cooled installations, consideration may be given evaporative condensers, as a means of providing full condensing unit capacity under peak load conditions in addition to reducing condensing water cost as much as 90 to 95%.

**Editor's Note:** K. M. Newcum, author of the MASTER HOUSEHOLD REFRIGERATION SERVICE MANUALS, will attempt, where possible, to supply an answer to specific problems sent in by service engineers. He is particularly interested in learning of some particular problem which the service engineer may encounter on a job, rather than problems of a general nature such as the one discussed above.

When a request for certain service information is received by Mr. Newcum, he will determine if there is sufficient information in the original letter-request to enable him to make an intelligent diagnosis.

Where possible, an answer will be given in as clear and understandable a manner as possible, with the understanding that when the information has been put into practice, the service engineer will write to Mr. Newcum and tell him of the results obtained.

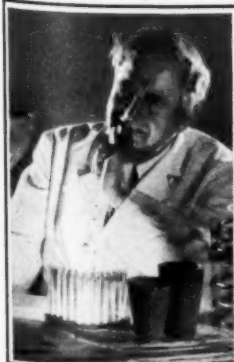
Fig. 2—Head Pressures for Methyl Chloride Systems



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Condensing Water  
Regulators  
are Certified to Excel

Ask for catalog covering complete line of Condensing Water Regulators, Compressor Parts, Valves and Fittings

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"Don't get the idea, young man, that you are the one who sold me a Copeland. I asked five or six other druggists who have Copelands, and THEY are the ones who convinced me."

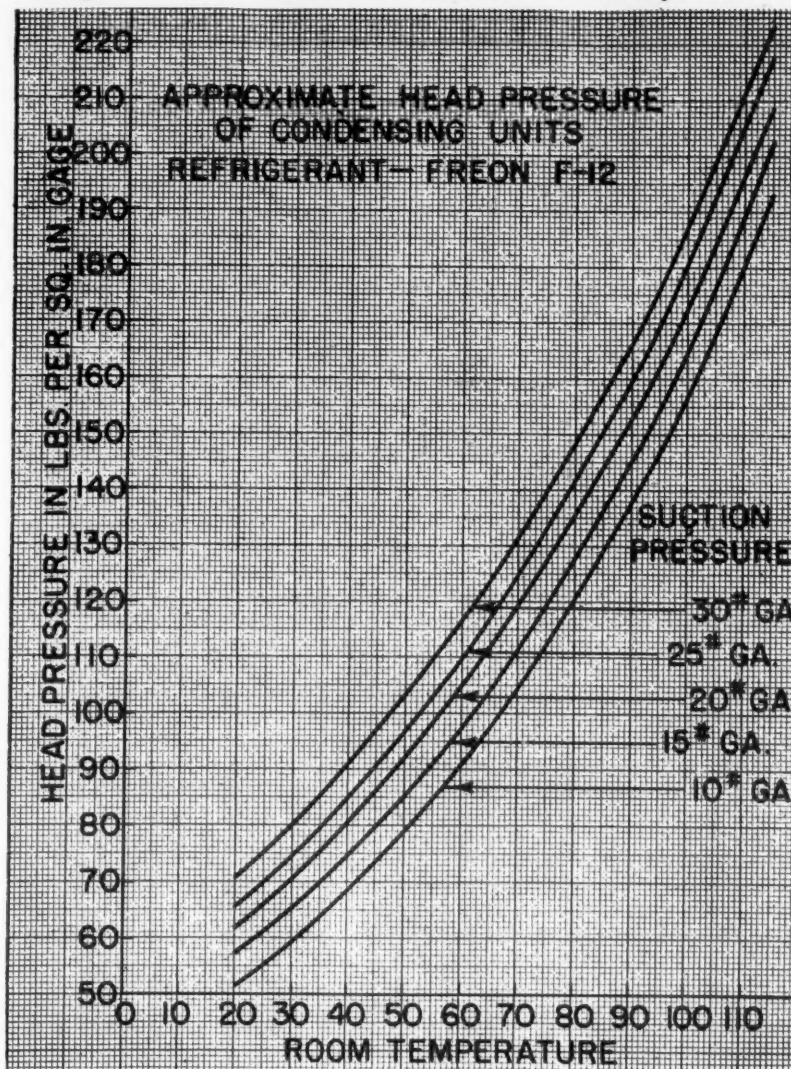
Yes, you'll find Copeland Commercial Refrigeration Units the easiest to sell because of their successful record in thousands of soda fountains, restaurants, hotels, meat shops and dairies.

Write for our Sales Plan

**COPELAND**

REFRIGERATION CORPORATION . . . DETROIT, MICHIGAN

Fig. 3—Head Pressure Chart for Freon Systems



## Mansfield Passes Ordinance To License Electricians

**MANSFIELD**—An ordinance requiring the licensing of all working electricians in Mansfield has been passed by the city council. It provides that any person, firm, or corporation engaged in making electrical installations shall be bonded in the amount of \$1,000, to insure the person contracting for the work against damages resulting from incompetent work. It also provides for a \$25 annual fee.

## Hill Addresses RSES Meeting On Air Conditioning

**DAVENPORT, Iowa**—Dr. E. Vernon Hill, of Refrigeration and Air Conditioning Institute of Chicago, recently spoke on the subject of air conditioning before members of Mississippi Valley chapter of Refrigeration Service Engineers' Society, representatives of Herman Nelson Corp., Moline, Ill., and other refrigeration men in this territory.



**TRAINING MEN IS OUR JOB**

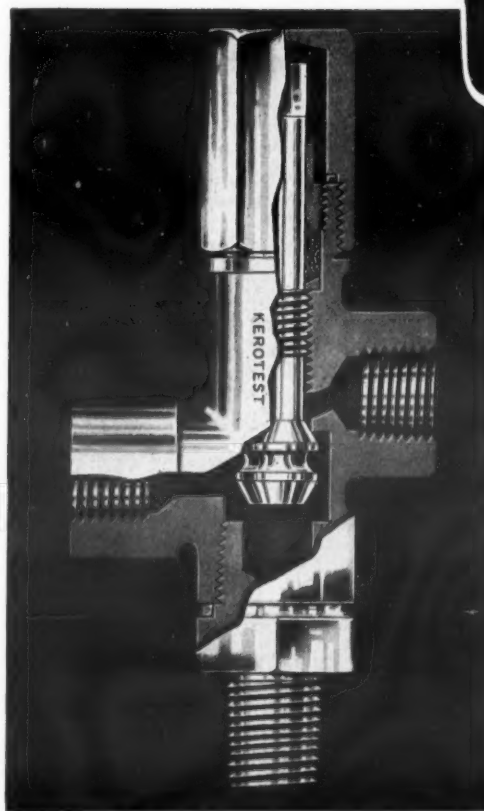
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*The Ideal Solution to Valve Problems in Refrigeration or Air Conditioning*

# CONTROL



**W**HATEVER may be your problem in refrigerant flow control, you will find the Kerotest line not only conveniently complete and comprehensive but also backed by the ready cooperation of our engineers in working out new improvements in refrigeration flow and control.

For example, one of the latest developments is the new Kerotest Type 718 Receiver Shut-off Valve, designed to meet the insistent demand of managers of service departments of large ice cream manufacturers for a valve that would speed the operation of changing and cleaning filters and eliminate the necessity of releasing the refrigerant in confined quarters such as is commonly encountered in servicing ice cream refrigerating units.

This valve has proven very practical and efficient in service, the saving in refrigerant alone more than paying for the initial cost of the valve as it provides a by-passing arrangement through the valve permitting the refrigerant between the liquid receiver valve and the cooling coil to be drained into the base of the compressor.

This Kerotest development is illustrative of the close technical cooperation maintained at all times with the requirements of the refrigeration and air conditioning industry—why Kerotest is the logical source for the latest in improved refrigeration control. Kerotest Jobbers, located in every important center, are ready to supply your requirements quickly and conveniently.

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**KEROTEST MANUFACTURING CO.**  
PITTSBURGH, PA.



## Boston Air-Conditioning Dealers Optimistic Despite Slump of 50% in June Sales

BY F. O. JORDAN

BOSTON—Notes of both joy and sadness were heard in the theme song for June by air-conditioning dealers here when interviewed by the representative of AIR CONDITIONING AND REFRIGERATION NEWS. The prevalent note of exultation over the 100% increase of 1937 air-conditioning sales up to June 1 as compared to sales for the corresponding period of 1936 was soured by universal disappointment at June's 50% reduction under sales figures for May.

Various reasons were assigned to the drastic and unexpected plunge in the volume curve at the time of the year when sales, especially in small and medium size air-conditioning

equipment, might logically be expected to climb.

Concern of the conservative New England Yankee over the possible consequences should C.I.O.'s meteoric rise eclipse "Democracy's once potent power," was generally conceded first place as the probable "hamstringer" of the business stride, while latest tax experiments were allotted to a place not far behind Lewis' Legions in importance.

As an example of the latter influence was cited a chain store's decision to recall an order for more than two dozen air-conditioning systems, when its management learned that resultant taxes to the govern-

ment would total more than one-quarter of the cost of all the air conditioning which they had contemplated.

### CLIMATE A HINDRANCE

The unseasonably cool June weather borne of prevailing east winds which, with unusual persistence, roll in across New England's rock-bound coast from the chill waves of the Atlantic, came in for its share of blame also. As one air-conditioning manager summed up the weather situation:

"No sooner do you get your prospect to the point of buying than it gets so cold that he shivers under two blankets that night and decides to wait for next year when his air-conditioning unit probably will cost him more. It's hard to keep people's minds on cooling unless they are hot."

Common among New England air-conditioning vendors is the fixed

opinion that especially in their section of the U. S. A. do folks tend to spend their money for the atmosphere of mountain and seashore rather than for air-conditioned summer comfort in their respective homes. For both mountain and seashore are at their very doors.

It is commonly estimated that probably 90% of all city dwellers in New England who might be deemed prospects for air conditioning at home, spend the major portion of the summer in Nature's grand but fickle air conditioning.

### RECORDS SHOW NEED

As a counter-irritant to the popular belief in New England's immunity to summer discomfort is the chart prepared by one of Boston's leading air-conditioning concerns which is said to be based upon the Weather Bureau's records for more than 12 years, and which indicates 111 days each average year upon which comfort demands cooling and/or dehumidification.

Opinion among the dealers indicates that in the neighborhood of 60% of all new homes in New England are being provided with air conditioning of the winter variety which includes heating, humidification, air cleaning, and air circulation, and with arrangements for installation of summer conditioning at a later date—under the popular assumption that drastic reductions in cost of summer air-conditioning are imminent.

Practically every manager visited volunteered his belief in the value of an educational program for the purpose of teaching small consulting engineers and neighborhood contractors, as well as potential buyers of domestic air conditioning, that no considerable reductions in air-conditioning costs are possible.

Another unanimous vote was against the misguided contractor who jumps into the field of air conditioning without a working knowledge of the business, because of the lure of the "easy money" which he fancies it offers. An educational program along these lines was advocated by some, while others expressed the opinion that such contractors will learn only through sad experience.

### COST CUTTER A MENACE

"One of the worst problems the legitimate dealer-contractor in air conditioning has to face, is the contractor who puts in a low figure because he fails to realize what he is up against," declared the same manager.

Common ways of "cutting" estimates are: to base design on lower outside and higher inside conditions, to assume lighter occupancy loads, to reduce the outside air figured for ventilation, and to eliminate controls and other desirable appurtenances.

Such cutting generally results in an inferior installation and if carried too far will result in complete failure, to the detriment of everyone concerned and of the air-conditioning industry as well, it was said.

Another unanimous complaint was regarding the economic waste resulting from current practice in which all bidders upon a prospective installation must completely engineer and design the same proposed air-conditioning system in order to estimate the cost and submit bids upon it. Since only one bid will be accepted, the costly engineering work of the "also rans" is wasted.

The manager of one of the leading dealers in this section declared that in one instance he knew the total cost of the estimate-making engineering work done by all bidders together to be in excess of \$5,000. Yet the total cost of the completed installation was only \$5,000.

Obviously, such conditions retard the growth of the industry, and cannot continue indefinitely.

### FAVOR ONE CONSULTANT

One dealer volunteered the statement that conditions would be improved considerably if the general practice were adopted of retaining one competent air-conditioning consultant upon each prospective project to establish design conditions, prepare load estimates, and formulate an air-conditioning design of such flexible nature that the use of any satisfactory air-conditioning equipment would be permitted.

It was maintained that, with this arrangement, the cost of field engineering would be reduced to a fraction of its present proportions because it would be performed but once for each installation, and incompetent "fly-by-nights" would be practically eliminated from the pic-

ture because all bids would be made upon the same basis.

### AN OBJECTOR SPEAKS

Upon being asked, some dealers expressed the opinion that the idea might work, provided that unbiased and competent consultants in air conditioning could be found in sufficient quantities. But one manager said, "No, no, a thousand times, no."

His reasons for "noing":

1. The claim that very few consulting engineers really know air conditioning; that they tend to base design upon perfect inside conditions under maximum loads, to follow the rules which they have read in the "guide," and to add all loads together, even though they do not exist at the same time. It was explained that most consultants are so far out of step with recent developments in air conditioning that they generally advocate obsolete methods and specify equipment long out of date.

The results, claimed this manager, were prices which generally frighten the prospect away from air conditioning, and designs which result in out-of-date and unsatisfactory installations in the case of persistent prospects who go ahead regardless of cost.

2. The claim that, if field design should be taken over by consultants, manufacturers would be prevented from utilizing their ingenuity in designing the air-conditioning system, and the purchaser would not, as at present, benefit from the composite skill of these manufacturer bidders.

3. The claim that superior equipment would be penalized by being placed on a par with inferior equipment.

4. The claim that the enterprising sales engineer would be robbed of the opportunity of developing prospects for himself, because all prospective installations would be thrown open to all bidders.

Practically all dealers interviewed, combine sales and engineering to the extent that the salesman must make his survey, prepare his load estimate, and select the equipment to be used. Generally, an engineering staff is maintained sufficient to check load estimates and equipment selections, and to prepare the necessary drawings.

One of the important duties of the salesman is to weed out unlikely prospects before time and money are spent engineering a project which is not likely to become a reality.

### PUBLIC IGNORANT OF COST

Most of the public has little conception of the cost of air conditioning. Yet, such is the public's interest in air conditioning, that when asked if it would like a figure on the cost of air conditioning a home or place of business, the public's answer generally is in the affirmative, even though many of its members are not prepared to pay the price.

This fact gives rise to the preliminary approximate bid which can be made by the veteran in a few minutes. The reaction of the prospect to this tentative bid goes a long way in telling the salesman whether this prospect is worth the salesman's time.

This procedure, judiciously used, is said to go a long way in reducing the burden of unproductive field engineering.

Installation of air conditioning demands a knowledge of the contracting business, including the purchase of miscellaneous materials, the subletting of various parts of the work, and the coordination of the different types of work involved. Lack of this knowledge spells inevitable disaster to the dealer, regardless of the calibre of his product and his salesman.

Since the majority of merchandizing specialists do not have this contracting experience, the sales concern generally is faced with the alternative of trusting its installation work to some contracting concern, or of going to the expense of employing experienced men to build up an installation department of its own.

Here in Boston, only one dealer was found who has built up a complete installation department of his own. Some have avoided this overhead by forming an alliance with some favored contractor whereby the contractor does all installation and contracting work for the dealer. Other dealers install their own equipment and all refrigerant piping, but sub-let ductwork, and steam and water piping.

## OUR BATTLES ARE FOUGHT ON THE DRAFTING BOARD

But the results are always the same—Peerless has never met a refrigeration problem that it couldn't lick.

Here we find "Dusty" Miller, Manager at the New York Factory, planning the "tactics" of an installation with John Murcott of the engineering staff.

"Dusty" points out on the sample Flash Cooler he's holding that this unit delivers a large volume of properly cooled, high humidity air, through its multi-louvered drip pan—that the wide but shallow type of coil, with Peerless "Rifling," is the most efficient of its kind. Therefore, the Flash Cooler is the most effective weapon to use in this battle against heat.

Flash Cooler can win refrigeration battles for you too.

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BUY PEERLESS FOR PERFORMANCE

## PAR AIR COOLED HIGHSIDES

PAR refrigerating equipment has been designed by men with years of experience in the commercial refrigeration industry. All models have been thoroughly tested before approving for production.

Multiple cylinders of large capacity insure very low operating speeds. Sizes ¼ to 1 horse power are two cylinder pumps. Sizes 1½ and 2 horsepower are V type four cylinder pumps.

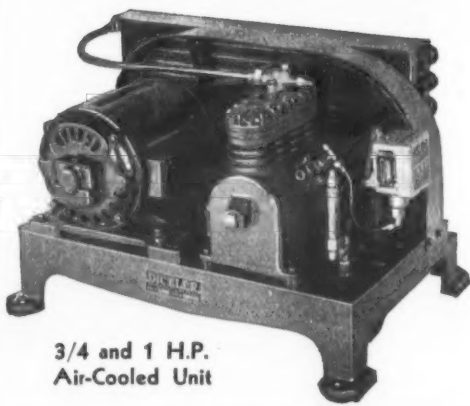
Par highsides are designed for use with Freon or Methyl Chloride refrigerants. All units are charged with Freon unless otherwise specified.

All air cooled highsides are equipped with oversize condensers, extra large receivers, sight oil gauge, shut-off valve between condenser and receiver, completely wired ready for installation.

Attractively finished, red pressed steel base, motor-compressor—control, black enamel, belt and fan guard silver. Base silver striped as shown in illustration.

MODERN EQUIPMENT CORPORATION  
DEFIANCE · OHIO · U.S.A.

## DICELER 4 CYLINDER UNITS



3/4 and 1 H.P.  
Air-Cooled Unit

Modern Compressor Units for Modern Refrigeration and Air-Conditioning applications are found in Diceler Four Cylinder Units. A compressor for every refrigeration need may be selected from the complete line of models from ¼ hp. to 30 hp.

A study of DICELER features outlining the exacting methods of construction and the high grade material used, will explain why DICELER has found favor in the eyes of experienced engineers. Write for catalogue.

DEISSLER MACHINE COMPANY  
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Over a sixth of a century in electric refrigeration

**MASS PRODUCTION MAKES THE KOCH ECON-O-CASE POSSIBLE**

\$10,000.00 could not have bought as good a fixture as an Econ-O-Case a few years ago. Yet today, thanks to modern production methods, Koch has brought the cost of the new Econ-O-Case down to the very lowest price level.

The Econ-O-Case has a welded steel body, insulated with solid CORKBOARD, glazed with three panes of glass. It will display meat, keep meat, and sell meat PROFITABLY.

You need more information about the Koch Econ-O-Case. WRITE KOCH TODAY FOR DISTRIBUTOR PROPOSITION

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## SUPPLY JOBBER ACTIVITY

### Capson Co., Supplies Jobber, Opens in Brooklyn, N. Y.

BROOKLYN, N. Y.—Charles A. Pose and his son, Albert Charles Pose, have opened The Capson Co. at 106 Rogers Ave. as jobber of refrigeration and oil burner supplies and equipment. Name of the new firm is derived from the father's initials prefixed to "son."

For the past four and one-half years the senior Mr. Pose has been a representative for Melchior, Armstrong, Dessau Co., first in Brooklyn, Queens, and Long Island, later in Brooklyn alone.

The younger Mr. Pose has had refrigeration experience with Long Island Refrigeration Co. in Jamaica and Long Island, and oil burner experience with Advanced Oil Burner Co. in Brooklyn. He will handle the new firm's counter business.

### Goldberg Named Ranco Agent

CHICAGO—Herman Goldberg Co., refrigeration supply jobber, has been appointed factory representative in this district for Ranco, Inc.

### W-M Co. Increases Floor Space, Signs New Lease

MILWAUKEE — W-M Refrigeration Co., manufacturer's agent for refrigeration, air-conditioning, and oil-burner equipment, has signed a three-year lease on its present location, and has added an extra floor to the building.

The W-M Co. has handled Cope-land commercial refrigeration equipment for the past 12 years, and last year took on the household line.

G. D. Wang is president, and F. A. McLaughlin is secretary-treasurer of the W-M organization.

### Salt Lake Hdw. Co. Handling Va. Smelting Refrigerants

SALT LAKE CITY—Salt Lake Hardware Co. has been appointed sales agent in Utah and southern Idaho for the line of sulphur dioxide and methyl chloride refrigerants by Virginia Smelting Co.

R. A. Harding is manager of the Salt Lake company.

## THE BUYER'S GUIDE

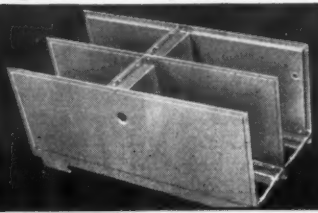
### KOLD-HOLD ICE CREAM CABINET CONVERSION UNITS

Modernize old equipment... provide much greater storage space for packaged goods... eliminate brine leaks and attendant odors... reduce weight and simplify installation... require a minimum of service... provide ideal temperatures under all conditions... cost less to operate... quickly and easily installed in any standard cabinet at small cost.

Write for Complete Facts

KOLD-HOLD MFG. CO. - LANSING, MICH.

As Outstandingly Superior as the KOLD-HOLD System of Truck Refrigeration



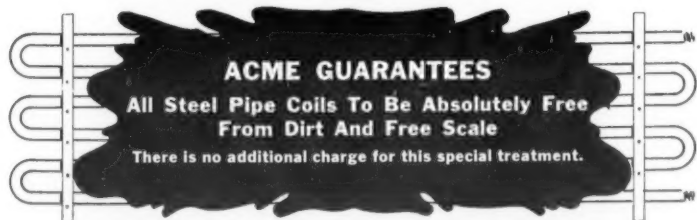
SEAL RINGS  
BUSHINGS  
BEARINGS  
SEAL NOSES

### COMPRESSOR SEALS

Made of "SABECO" Bronze wear longer. Correct tin content gives "SABECO" toughness. There is less seal wear. High lead content preserves lubricant film. Low impurity percentage (less than 2/10 of 1%) assures free running and no scored shafts. Suitable for all refrigerants. Send blueprints for quotation and further details.

Fredericksen Company  
Saginaw, Michigan

### PIPE COILS

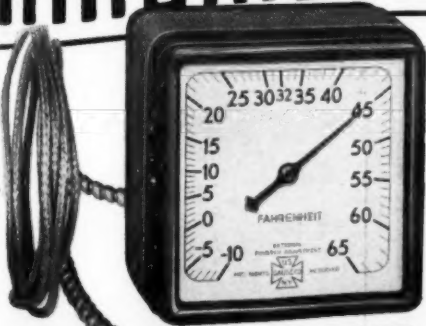


Jackson ACME INDUSTRIES, Inc. Michigan

## U. S. REFRIGERATION

## THERMOMETERS

PERMANENTLY ACCURATE



U. S. BUILDS BETTER THERMOMETERS

U. S. GAUGE CO. 44 BEAVER ST. NEW YORK

### Peerless Jobbers Offer Trade-in Deal on Evaporators

CHICAGO—Offering of a trade-in allowance on old evaporators on the purchase of Peerless Humidi-Pack evaporators highlights the campaign being staged this month by Peerless of America, Inc. in conjunction with 58 refrigeration jobbers throughout the United States.

The trade-in allowance is applicable to old evaporators of any make, excepting iron and steel pipe models. The campaign is said to be the first jobber-manufacturer national sales promotion drive in the history of the industry.

Jobbers participating in the drive have been furnished with display and identifying material which includes pennants, posters, sign cards, and window pieces, as well as advertising literature with their firm names imprinted.

Among the display pieces are two large photogravure enlargements, one of a cutaway model evaporator with its important features indicated by arrows, the other of a model posed with a group of Humidi-Pack evaporators.

Pennants in four colors, three kinds of banners, and large show cards announcing the trade-in allowance complete the group of display material. Literature furnished to the jobbers includes 8 1/2 x 11-inch mail-out pieces and self-mailing broadsides which announce the promotion and give the Humidi-Pack sales story.

This is the first of a series of campaigns which Peerless of America, Inc. plans to stage through jobbers, says Advertising Manager N. P. Johnson.

### 81% of Jobber Meeting Exhibit Space Taken

(Concluded from Page 1, Column 4)

Wis.; Zenith Carburetor Co., Detroit; Minneapolis-Honeywell Regulator Co., Minneapolis; American Injector Co., Detroit; Fedders Mfg. Co., Inc., Buffalo; Kold-Hold Mfg. Co., Lansing, Mich.; Kerotest Mfg. Co., Pittsburgh; Business News Publishing Co., Detroit; Detroit Lubricator Co., Detroit; General Electric Co., Cleveland; Victor Mfg. & Gasket Co., Chicago; Tecumseh Products Co., Tecumseh, Mich.; Refrigeration Maintenance Corp., Chicago.

The Starr Co., Richmond, Ind.; Bonney Forge & Tool Works, Allentown, Pa.; Borg-Warner Service Parts Co., Chicago; Automatic Products Co., Milwaukee; Harry Alter Co., Chicago; Virginia Smelting Co., West Norfolk, Va.; Kelvinator division, Nash-Kelvinator Corp., Detroit; Perfection Refrigeration Parts Co., Harvey, Ill.; Imperial Brass Mfg. Co., Chicago; Wolverine Tube Co., Detroit; Rempe Co., Chicago; Mills Novelty Co., Chicago; Cutler-Hammer, Inc., Milwaukee; Ansul Chemical Co., Marinette, Wis.; and H. Channon Co., Chicago.

At the first meeting of the general convention committee, the following members were elected chairmen of sub-committees: Irving Alter, publicity; H. W. Blythe, reception; Barton B. Dawes, program; Harry Drownes, auditing; George Franck, manufacturers; William Hauber, housing; R. L. Hendrickson, educational; Ray Johnson, jobbers; George Monjian, entertainment; Ray Polley, exhibitors; Fred Roth, membership; and E. W. Scotten, registration.

Other members of the general convention committee are Odgen Armstrong, Percy Bossert, Joe Corso, Herman Goldberg (chairman), Arvid E. Karlberg, Harold T. McDermott, Arnold Schroeder, Willis Stafford, and Ralph Vanston.

During the general discussion which followed committee appointments, it was decided that the business and educational sessions of the convention will be called to order at 10 a.m. and dismissed at 1 p.m. The registration fee, which includes the banquet ticket and admission to all other features of the convention, was set at \$3 each for members of the society and their wives, \$5 each for non-members, and \$3 each for the wives of the non-members.

The banquet and a floor show will be held the first night of the convention, Nov. 3. The second night will be devoted to the exhibitors' carnival, and the third to a cabaret farewell party directed by the ladies.

### New Combination Tool Marketed by Imperial

CHICAGO—A new combination tube bender and coil maker, especially adapted to refrigeration and air-conditioning work, has been introduced by the Imperial Brass Mfg. Co.

The new tube bender can be used not only to bend tubing to any desired angle and to make return bends, but also to make either round or obround coils.

### New Tube Bender



It will take copper, brass, or aluminum tubing in thicknesses between .020 and .065 inches. Separate benders are available for 3/8 inch, 1/2 inch, 5/8 inch, and 3/4-inch O.D. tubing. The tool is designed to clamp on a bench.

Operation of the tool is said to be simple, and accurate bends can be made, it is claimed, without flattening or crimping the tubing.

### Servicemen Licensed In Jackson, Mich.

JACKSON, Mich. — The Jackson city council recently gave first reading to an ordinance licensing refrigeration machine operators, steam engineers, and firemen which was presented by the International Brotherhood of Firemen & Oilers.

According to the proposed measure, a board would be established to administer the ordinance and conduct examinations. Annual license fee for refrigeration machine operators would be \$3.

Frank Hawks, representative of the brotherhood, told members of the council that by adopting the ordinance they would be "beating the gun" on the state legislature which, he said, plans similar licensing measures.

### Leonard Distributor Holds One-Day Service School

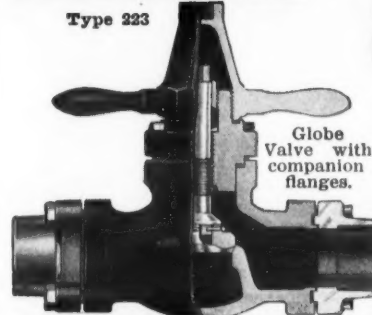
DALLAS—Peaslee-Gaulbert Corp., Leonard distributor, recently conducted a one-day service school for North Texas dealers.

George Ottens, service manager, and Bill Granfors, Peaslee-Gaulbert engineer, were in charge.

## THE BUYER'S GUIDE

### HENRY

Type 223



### Wing Cap Valve

DESIGNED ESPECIALLY FOR FREON

Has patented, rotating, self-aligning, tapered, brass stem-disc. Resilient packing can be re-packed under pressure. Wing cap can be inverted and its socket used to operate valve. Cap sealing on bonnet provides additional protection against leaks. Unrestricted flow. Valves may be obtained with screw ends, or with Solder fittings, or with various types of companion flanges.

HENRY VALVE CO. 1001 19th St. PAULINA AVE. CHICAGO, ILL.  
Stocked By Leading Jobbers



### PURO ELECTRIC WATER COOLERS

Thoroughly reinforced all steel attractively finished cabinets.

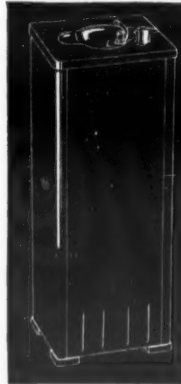
Complete line of different Models and Capacities.

Write for details and sales prices.

Puro Filter Corporation of America

440 Lafayette Street, New York City

Spring 7-1800



### Cordley ELECTRIC WATER COOLERS

Profitable cooler business depends on having the right coolers to sell. Cordley Coolers are compact and good-looking; a simple, trouble-free mechanical unit; made by a concern specializing in water coolers for almost a half century. Priced to give you an attractive profit, these coolers are used by such representative concerns as Sears Roebuck, American Optical Company, Remington Rand, Otis Elevator, Sun Oil Co., Pacific Mills, CORDLEY & HAYES, 141 Hudson Street, New York City.



Dayton V-Belts are the logical choice for all types of appliances, because they provide silent, dependable transmission—because their powerful grip prevents slippage—because they run smoothly without weaving, twisting or vibrating. A nearby distributor carries a complete stock.

THE DAYTON RUBBER MANUFACTURING CO. DAYTON, OHIO  
WORLD'S LARGEST MANUFACTURER OF V-BELTS

Dayton V-BELTS



## Kelvinator Sales Meet Held in Baltimore

BALTIMORE—A meeting marking the start of an extensive summer sales campaign was recently attended by Kelvinator distributors and sales personnel from Maryland, Virginia, West Virginia, and Pennsylvania in Lord Baltimore hotel.

Presiding was Pierre L. Miles, Kelvinator factory representative. Speakers included Jack Crossin and Jack Scott, district representatives.

## Carolina Norge Distributor Holds Sales Meeting

SPARTANBURG, S. C.—Southern Bearing & Parts Co., Charlotte, N. C., Norge distributor in the Carolinas, was host to dealers and salesmen of this territory at a banquet and sales-meeting at the Cleveland hotel.

Principal speakers were J. H. Northey, president, and George Fullenwide, sales promotion manager, of the distributorship.

## QUESTIONS

### Sales Figures by States

No. 3081 (Distributor, Maryland)—“If possible, we should like to secure some information which has been published in the REFRIGERATION NEWS.

“The data which we desire, as a concrete example, was furnished in the Feb. 5 issue, 1936, page 18 and was headed ‘Sales Figures’—sub-title ‘California Shows Largest Gain in Nema Sales by State Tabulation.’

“We should like these figures for the years 1931, 1932, 1933, 1934, 1935 and 1936, and, if possible, January, February, March, April and May of 1937. We believe the 1936 figures were published in approximately February of this year; but, unfortunately, we cannot locate but two of our February issues and neither of them contains the desired information.”

Answer: Nema refrigerator sales figures by states for the years 1932, 1933 and 1934 were published in the 1935 REFRIGERATION AND AIR CONDITIONING MARKET DATA BOOK, now selling at the reduced price of \$1.50 per copy. Figures on sales by states previous to 1932 are not available.

Sales by states for 1935 were published on page 18 of the Feb. 5, 1936 issue of REFRIGERATION NEWS and for 1936 on page 2 of the March 24, 1937 issue.

Sales by states for the first four months of this year were published as follows:

January sales—March 31, 1937, page 16.  
February sales—April 7, 1937, page 24.  
March sales—May 5, 1937, page 27.  
April sales—June 9, 1937, page 4.

### For Making Dry Ice

No. 3082 (Engineer, New Hampshire)—“The Airo Supply Co. of New

York referred me to you as a possible means of locating the manufacturer of equipment for making dry ice. I have an ice cream manufacturer who wants this equipment but have been unable to locate a source of supply as yet.”

Answer: The International Carbon Engineering Corp., Kennett Square, Philadelphia, Pa., are manufacturers of equipment for manufacturing dry ice.

The following companies make dry ice, and perhaps might give you the desired information.

Dry Ice, Inc.  
60 E. 42nd St., New York, N. Y.  
Liquid Carbonic Corp.  
3100 S. Kedzie Ave., Chicago, Ill.  
Mathieson Alkali Works, Inc.  
60 E. 42nd St., New York, N. Y.  
Michigan Alkali Co.  
1622 Ford Bldg., Detroit, Mich.  
Pure Carbonic, Inc.  
60 E. 42nd St., New York, N. Y.

No. 3083 (Reader, New Mexico)—“Your name was given to me as a place where one might obtain some information on the making of Dry Ice out of CO<sub>2</sub> gas.

“Please let me know what you can furnish along this line as I am thinking of going into this business with an old associate of mine who has a major interest in one of the CO<sub>2</sub> gas wells in the eastern part of this state.”

Answer: See above.

### Water Cooler With an Ice Cube Drawer

No. 3084 (Distributor, Indiana)—“Some time ago we saw an advertisement in your paper for an electric water cooler that had a storage compartment for cooling bottles and also one or two ice cube trays.

“We have looked through many copies of your paper and have been unable to locate the ad again. Can you furnish us with the name of the manufacturer?”

Answer: (We believe the electric water cooler with ice cube trays to which you refer is the one that Puro Filter has just put on the market. Story regarding this unit was published on page 6 of the May 5 issue of AIR CONDITIONING AND REFRIGERATION NEWS, and this company may be contacted at 440 Lafayette St., New York City.

### Makers of Air Filters

No. 3085 (Refrigeration contractor, Georgia)—“Please give me a list of manufacturers of air filters. I want them for the assembling of air conditioning equipment.”

Answer: An up-to-date list of manufacturers of filters for air conditioning systems may be found in the “Comfort Cooling Guide,” which has been published as a supplement to the June 23 issue of AIR CONDITIONING AND REFRIGERATION NEWS. Copies of this issue are available at the cost of 20 cents per copy.

### Number of Units in Use

No. 3086 (Advertising Agency, New York)—“Do you know of any estimate which would attempt to give a figure for the number of automatic refrigerators in use in the United States? We have the following and should appreciate your letting us know whether these seem to be fairly reasonable figures. Are there, perhaps, any other types which should be included?

Gas refrigerators 1,000,000  
Electric refrigerators 9,000,000

“We have been unable to obtain this information from either the National Electrical Manufacturers Association, New York, or the publication, ‘Refrigeration.’

Answer: In the Jan. 6, 1937 issue of AIR CONDITIONING AND REFRIGERATION NEWS is given our estimate for the number of electric refrigerators in use in the United States as of Dec. 31, 1936. This figure is 9,071,000 units. In the first five months of this year more than a million refrigerators were put in the hands of dealers, which means that from 700,000 to 900,000 more refrigerators have gone into use in United States homes in this five months' period.

We have no authoritative sales information on gas-operated refrigerators. However, Servel, Inc., manufacturer of the Electrolux gas-operated refrigerator recently celebrated the production of the millionth Electrolux gas refrigerator, which means that there must be from 800,000 to 1,000,000 gas refrigerators in use in this country at the present time.

### Patching Porcelain

No. 3087 (Service man, Connecticut)—“Please advise me through your column where I could obtain information regarding the patching of porcelain. List names of companies to whom I could write.”

Answer: The following companies

can give you information and furnish material for patching porcelain enamel surfaces:

Lowe Bros. Co.  
450 E. Third St., Dayton, Ohio  
Tillette Cement Co., Inc.  
401 Lafayette St., New York City  
Tuttle's Tite-On Cement Co.  
4525 Ravenswood Ave., Chicago, Ill.  
Universal Shellac Stick Co.  
28 Howard St., New York City  
Sauerisen Cement Co.  
Pittsburgh, Pa.  
Kay & Ess Co.  
1200 Lea St., Dayton, Ohio  
Jno. L. Larson  
1719 N. Melvina Ave., Chicago, Ill.  
Super Solder Co.  
Des Moines, Iowa  
J. B. Crawford Co.  
1759 Sunnyside Ave., Chicago, Ill.  
Vitrowhite Co.  
1456 Thome Ave., Chicago, Ill.

### Kitchen Bureau Address

No. 3088 (Dealer, Indiana)—“Will you please send us the address of the National Kitchen Modernizing Bureau of which Mr. H. L. Martin is manager?”

Answer: Address of National Kitchen Modernizing Bureau is 420 Lexington Ave., New York City.

## CLASSIFIED ADVERTISING

RATES: Fifty words or less, one insertion, \$2.00; additional words, four cents each. Three insertions \$5.00; additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

### POSITIONS AVAILABLE

LARGE, NATIONALLY ESTABLISHED manufacturer of commercial refrigeration and air conditioning equipment needs five territory supervisors; a real opportunity for men who have commercial refrigeration wholesaling, retailing and organizing experience; knowledge of air conditioning advantageous; must be free to travel; salary, travel expenses, bonus. Our employees know of this ad. Box 947, Air Conditioning and Refrigeration News.

SALES SUPERVISOR, traveling. Salary and expenses. Thoroughly experienced in display case sales. Must present lifelong record of unquestioned honesty and scrupulous integrity. Actual experience in sales management and good business practice. The right man will have a permanent position in established and rapidly growing business of nationally known manufacturer. State age, experience, territories traveled. Send photograph and complete references covering all positions previously occupied. Applications will be held confidential. Box 950, Air Conditioning and Refrigeration News.

### POSITIONS WANTED

R.A.C.I. GRADUATE student wishes connection in commercial refrigeration or air conditioning field. Single, 28, millwright and general experience. Has car. Prefers Midwest but will go where opportunity knocks. Box 949, Air Conditioning and Refrigeration News.

### FRANCHISES AVAILABLE

ARCOIL OIL BURNER distributors and dealers wanted for our 1937 model burners and boiler burner units. New low prices. Neat, compact, sturdy in design. Operates with the heavier fuel oils which contain more heat units. Write for literature and territory open in your locality. NATIONAL ARCOIL CORP., Newark, N. J.

### EQUIPMENT FOR SALE

HIGHEST QUALITY ISOBUTANE per pound \$.50 and up. THE STANDARD REFRIGERATION CO. OF PITTSBURGH, 1148 Dohrman St., McKees Rocks, Pa.

### REPAIR SERVICE

CONTROLS REPAIRED for the refrigeration and air-conditioning trade. Any make, almost any type. Every control individually calibrated. Steam traps, packless valve glands, and regulators repaired. If it contains a bellows, Halelectric can repair it. Service prompt, prices right, guarantee reliable. HALELECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

MAJESTIC AND GRIGSBY-GRUNOW refrigerator and radio parts service. We are the only original, the only genuine, the only direct factory in the world. All rebuilt units guaranteed 18 months. Beware of inferior replacements and parts. G & G GENUINE MAJESTIC REFRIGERATOR & RADIO PARTS SERVICE, 5801 Dickens Ave., Chicago.

HERMETIC UNITS REPAIRED and exchanged—Majestic \$18.50—Westinghouse \$25.00—Gibson \$18.50—General Electric \$25.00—all model household units. Prices F.O.B. our factory—six months guarantee. Complete machine shop service on all makes domestic and commercial. ALLIED REFRIGERATION PRODUCTS CO., 1947 Flushing Ave., Brooklyn, N. Y.

### PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

## GO TO Gilmer

Service More Units • Make More Money

Sell the belt that fits the job

Jobbers everywhere

L. H. GILMER CO., Tacony, Philadelphia

“THE OLDEST FIRM OF RUBBER FABRIC BELT SPECIALISTS”

FREE

120-page Catalog  
Pocket Size—Fully Indexed  
Makes it easy to  
find the belt you want  
Get copy today

## HASCO

Shaft  
Drive in tool  
for 61  
FRIGIDAIRE  
and 4  
MONTGOMERY  
WARD  
Compressors

HASCO, INC.  
Greensboro, N. C.

Write for New Catalog

## Ranco EXACT REPLACEMENTS

WITH the complete Ranco line of refrigerator thermostats to choose from, you are ready for any replacement job. More than 40 models—most of them EXACT REPLACEMENTS! A few minutes easy work—another customer made happy.

Write for Bulletin showing complete line of Ranco Replacements.

RANCO, Inc., Columbus, Ohio

## A COMPLETE LINE of the World's Finest COOLING EQUIPMENT

### PELCO Beverage and Beverage-Food COOLERS

PELCO cools faster—makes its own floating ice automatically—as needed. Beverages are cooled from room temperature to desired degree in about 30 minutes. Complete range of sizes in both combination and beverage cooler models provides an ideal PELCO for every need. Taverns, restaurants, hotels, lunch rooms—are prospects for PELCO. A few choice territories are still available. Get the facts! Write Desk A77.



(Above) Combination Beverage-Food Cooler PELCO Model 200.  
(Left) PELCO Model 240 Beverage Cooler. Holds 240 standard 12-oz. bottles.

Mfg. by Refrigeration Division

PORTABLE ELEVATOR MFG. CO.  
BLOOMINGTON, ILLINOIS, U.S.A.

UNIVERSAL COOLER CO. of  
CANADA Ltd., Brantford, Ontario

## New

“SELF CONTAINED” REFRIGERATORS

—are available in either 30 or 45 cubic feet capacity, with electric unit mounted in bottom of cabinet.

CAPACITY is a real essential today; and here are two refrigerators, especially built to give the maximum in storage space. The two lower compartments of the Model 30 will accommodate 14 cases of beverage conveniently; the three lower compartments of the Model 45 have ample space for 21 cases—plus enough room for meats and dairy products, too.

Sold thru Distributors only. Write for Folder 3045.

GLOEKLER  
Manufacturing Company  
ERIE, PENNSYLVANIA  
SALES OFFICE: 420 FOURTH AVE., PITTSBURGH, PA.

Manufacturers of All Types of Commercial Refrigerators and Cases



## Present Heat Flow Estimating Across Air Spaces Is Incorrect, Declares Wilkes

SWAMPSCOTT, Mass.—That current methods used by engineers for estimating heat flow across air spaces in building construction are incorrect and lead to errors of several hundred percent, was the declaration made by Prof. Gordon B. Wilkes of the department of mechanical engineering at Massachusetts Institute of Technology before the recent annual convention of the American Society of Heating & Ventilating Engineers. Information presented by Prof. Wilkes was based on tests conducted by both himself and Carl M. F. Peterson, mechanical engineering instructor.

According to the speaker, extensive tests carried out in the laboratories of Massachusetts Institute of Technology show three very important facts, as follows:

A. The height of the air space (commonly ignored in estimating heat gain) may affect heat flow per unit of area across the air space by as much as approximately one third.

B. The position of the air space (a factor which generally is not considered) may affect heat flow by more than 300%.

C. Errors are especially serious when "reflective" insulations are used, and when the air space is so arranged that a large proportion of the heat-flow is by convection.

Indicative of the serious nature of the errors claimed is the fact that the standard practice of the air-conditioning engineer, in preparing the load estimate upon which equipment selections are based, is to use factors which do not include the influence of size and position of the air space, with the possibility of errors of so high an order that satisfactory performance of the system is gravely jeopardized.

"The fact that the air space between the studs in ordinary frame construction had definite insulating value has been long known, but its actual value was not appreciated until comparatively recent years," declared Prof. Wilkes. "But common practice in computing heat transfer across the air space uses laws which do not apply at all. The errors which result are not small, they may be as high as several hundred percent."

"The principles involved in air space insulation are radically different from those for ordinary insula-

tors and there has been much confusion among engineers as well as laymen due to a lack of knowledge of the fundamental laws of radiation and convection as well as a lack of experimental data.

"At the present time there are practically no data available in regard to the rate of heat transfer across air spaces that are not in the vertical position, although it is well known that the rate of heat transfer across horizontal air space must be much greater when the heat is passing upward rather than downward.

"This difference is much more marked in the case of reflective-type insulation, because radiation is minimized and convection remains the chief factor involved in the heat transfer.

### RADIATION

"The fundamental laws of radiation are well established, both theoretically and experimentally. The transfer of heat by means of radiation across an air space is dependent upon the temperature of the two boundary surfaces and their respective emissivities.

"Thickness of the air space has no appreciable effect upon the amount of radiation transfer. For example, if two infinite parallel plates are considered at temperatures of 60° F. and 20° F., respectively, the rate of heat transfer by radiation would be essentially the same if the distance between these plates were 1 inch, 1 foot, or 1 mile.

"Heat radiation striking an opaque surface must either be absorbed or reflected. Consequently, the radiation absorbed by a surface plus that reflected must equal in amount the radiation striking the surface.

"It is also obvious that if a material is a good absorber of radiation, it must be also an equally good emitter of radiation. For example, if a body is placed in an evacuated space and allowed to come to temperature equilibrium, the radiation absorbed must equal that emitted.

"As far as the rate of heat transfer across an air space by radiation is concerned, it makes no difference whether the reflective surface is on the cooler or warmer side of the space.

"Every surface, regardless of its temperature, is radiating and receiving heat by radiation. In the case of the transfer of heat by radiation across an air space, one is concerned only with the net heat transfer between the two surfaces at different temperatures.

### CONVECTION

"Convection as a means of transfer of heat across an air space follows very different laws and is much more complicated than radiation or conduction.

"In the case of radiation, the position of the air space (vertical, horizontal, etc.) has no effect, but it has a very marked effect on convection. The rate of heat transfer by convection across a horizontal air space with the heat flowing upward is roughly three times what it would be with the heat flowing downward.

"Convection also varies with the height of the air space up to approximately 2 feet.

"With ordinary surfaces facing a vertical air space, such as plaster, wood, paper, etc. radiation is responsible for roughly 65% of the total heat transfer and the error is not every serious.

"In the case of the newer type of reflective insulation, the transfer of heat by radiation is minimized, thus making convection responsible for most of the heat transfer. In this latter case the assumptions made above will lead to very serious errors in the calculation of the insulating value.

"It was decided to construct an air space 8 feet high by 2 feet, 8 inches wide and 3 1/2 inches across. This would correspond to about the normal height of a frame wall air space.

"Tests were conducted in five different positions, horizontal, and 45 degrees with heat flowing downward, horizontal, and 45 degrees with heat flowing upward and in the vertical position. Tests were made with aluminum foil facing one side of the air space or with black building paper.

"In order to determine the coefficients of convection for the different positions, aluminum foil was used for the outer surface so as to minimize radiation. The temperature difference was varied and in one case the direction of heat flow was reversed by sending heated water

through the calorimeter rather than cool water.

"The rate of heat transfer was not affected by having the foil surface absorbing rather than emitting heat."

Table 1 shows the effect upon heat-flow of the height of the air-space.

TABLE 1  
TOTAL HEAT LOSS PERCENTAGE ERRORS FOR VARIOUS HEIGHTS

Height of Test Specimen, Inches	Total Heat Loss B.t.u. Per Hour Per Sq. Ft.	Per Cent Error
6	170	31.0 high
9	154	18.5 high
12	140	8.0 high
16	130	Correct

The effect of the position of the air space is shown by Table 2.

Since conventional factors for heat flow are based upon tests in which the air space was in a vertical position, as the space between studding, it appears that the attic, in summer when heat flow is downward, is a much better insulator than indicated by the usual factor, but that the attic in winter when the heat flow is upward, is not nearly so effective an insulator.

The "Correction Multipliers" in Table 2 may be used to convert the conventional factor for vertical air spaces for use with air spaces in other positions.

Table 3 lists equivalent thicknesses of insulating material for air spaces in various positions.

TABLE 2  
COMPARISON OF RADIATION EFFECTS BOUNDED BY VARIOUS SURFACES

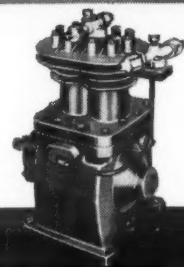
Position	Total Heat Flow		Correction Multiplier	
	Wood	Reflective Insulation	Wood	Reflective Insulation
Horizontal, heat flow downward.....	19.0	3.4	.78	.40
45° heat flow downward.....	22.7	7.1	.94	.82
Vertical.....	24.2	8.6	1.00	1.0
45° heat flow upward.....	25.3	9.7	1.05	1.13
Horizontal, heat flow upward.....	27.4	11.8	1.13	1.37

TABLE 3  
EQUIVALENT THICKNESS OF INSULATING MATERIAL

Position	Ordinary Surfaces	One Highly Reflecting Surface
Horizontal, heat flow downward.....	0.32 in.	1.67 in.
45° heat flow downward.....	0.27 in.	0.83 in.
Vertical.....	0.25 in.	0.70 in.
45° heat flow upward.....	0.24 in.	0.61 in.
Horizontal, heat flow upward.....	0.22 in.	0.50 in.

## THE BUYER'S GUIDE

### REPLACEMENT COMPRESSORS for All Standard ICE CREAM CABINETS

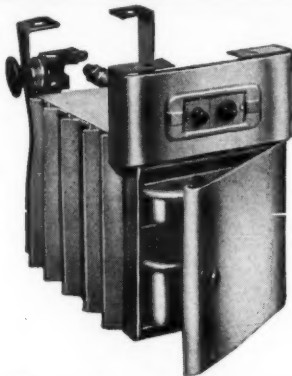


Bare Compressors and complete units (with or without motor and controls) especially adapted to ice cream cabinet installation and for replacement on all standard makes, of flooded type or dry expansion systems.

Write for new catalog.



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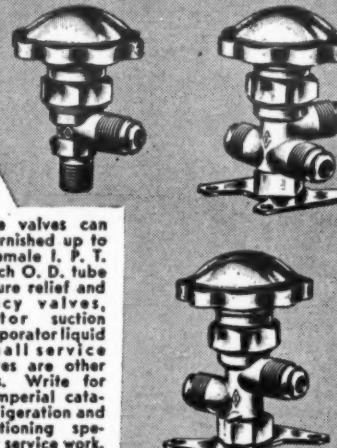
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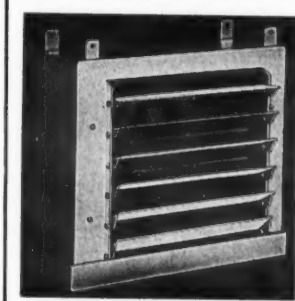
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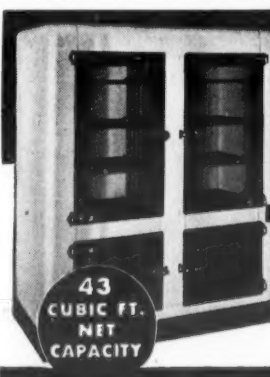
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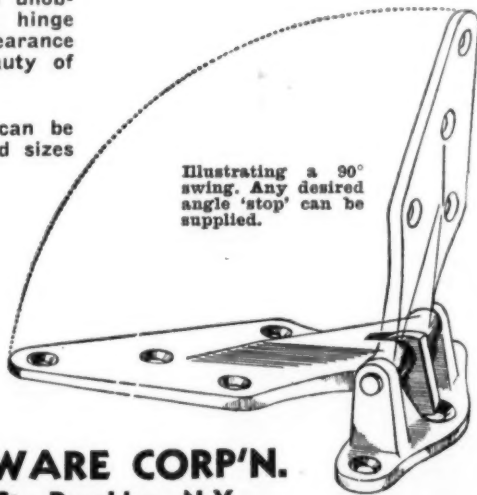
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## Hotel Owner's Home Conditioned by Frick

CHARLOTTE, N. C.—Among the more than 30 homes here equipped with Frick air conditioning is the residence of Alton E. Bland, owner of the Hotel Charlotte, and president of the company which operates the Washington Duke at Durham as well as several other North and South Carolinian hostels.

Recently the Bland home has been enlarged by addition of a new wing. This wing is air conditioned by a Trane conditioner, the refrigerating effect supplied by a Frick 2-hp. Freon-12 unit.

A feature of the new wing is the recreation room, in which the interior treatment ranges from the super-modernistic style at one end to the old-fashioned fireplace in the other. Air is supplied to the room through modernistic circular grilles high in the wall at one end of the room, and leaves through a ceiling opening above the bar.

The entire system is designed for all-year operation, either the summer or the winter function being available at the touch of a switch.

The system was installed by the Piedmont Engineering Co., Frick distributor here.

## 5 Dayton Drug Stores Installing Conditioning

DAYTON—Hughes Heating & Air Conditioning Co. is installing air-conditioning systems in five stores of Gallaher Drug Co., operator of a chain of drug stores in Ohio, Kentucky, and West Virginia, and has been awarded the contract to condition the new building being erected here by Joyce Cridland Co., manufacturer of hoisting jacks.

Ten and 15-ton systems will be used in the drug store installations, two of which will be in this city, and one each in Troy, Circleville, and Lancaster, Ohio.

A 15-ton system will be installed in the Cridland plant. The Hughes company also has the heating contract for this building.

### Ducts Match Cases in Paterson Men's Shop

PATERSON, N. J.—Panel duct-work specially designed to blend with the mahogany clothing cases on which it rests is the main feature of the Carrier air-conditioning equipment recently installed in Konner's men's clothing store here.

The system itself provides both summer and winter conditioning.

# How to Select and Install Air Conditioning Systems

By T. H. Mabley

## CASE NO. 24 Evaporative Condenser As Used in a System For a Restaurant

In some localities the cost of water required for a water-cooled condenser may often be so high that considerable saving on operating costs may be accomplished by the use of an evaporative condenser for the refrigerating machine in place of the conventional type of water-cooled unit.

Such an installation will now be discussed in connection with the air conditioning of a restaurant.

The building which houses the spaces to be conditioned is a one-story structure without basement. This construction presents a particular problem which is met by the construction of a shallow pit under the conditioned space to accommodate the refrigeration compressor and the air-conditioning unit.

Such an arrangement was decided upon by the owner of the building after a thorough study of the building construction and consultation with the air-conditioning engineer as to the best location for the equipment.

### PLANNING THE EQUIPMENT

It was concluded that the roof construction would not be strong enough to hold the entire weight of all the equipment and thus only a part of the equipment could be located on the roof. In view of that condition it would be inadvisable to install a reciprocating piece of machinery such as the compressor on the roof, but such a location would be particularly desirable for the evaporative condenser.

For several reasons it would be better to run the supply ducts under the floor rather than at the ceiling; thus we will locate the conditioner along with the compressor in the equipment pit.

The problem of air conditioning in this case is primarily one of summer cooling as the present radiation system and central heat supply is adequate for the winter season.

The heat load is a fairly normal calculation. The building load and other sources of heat gain may be computed in the usual manner. With a maximum occupancy of 120 people we should figure a fresh air load based on a minimum of 2,400 c.f.m. which is the quantity that will be required under maximum load conditions to keep the air purity at a fairly comfortable level.

With these conditions as a basis the heat gain calculation shows a total of 17.8 tons of refrigeration to maintain 80° dry bulb and 50% relative humidity in the conditioned area, under maximum outside temperature conditions. This will require a circulation of air of approximately 7,500 c.f.m.

### CHOICE OF SYSTEMS

To accomplish this performance a survey of the physical details of the building indicates that a central distribution system will be the most practical. It would be impossible to install a number of ceiling units as their appearance would be a mar to the neat interior finishings. Floor units would require too much floor space now used for customers.

The mezzanine presents a peculiar problem. A duct system would be so costly to install in the proper manner so that here, contrary to our previous conclusion, we will have to use floor units.

This arrangement will give us not only the most practical arrangement, but additional control for this section of the conditioned space. There are often times when the mezzanine will not be in use and so the cooling may be shut off to this portion.

The floor units will be of the standard type with cooling coils for direct expansion; blower and filters will have a cooling capacity of 1.2 tons each when supplied with 45° refrigerant.

The central conditioner will also be of the conventional type being equipped with centrifugal type blower, direct expansion cooling coils, and suitable filters. The unit will be assembled in the equipment pit and set slightly off the floor as the pit itself will only be built deep enough to give the proper clearance for working space around the equipment.

The refrigeration compressor will be set beside the conditioning unit. A tempering coil will be installed in the fresh air intake riser. It will

be impossible to place this coil in the conditioner as such a location would not permit the steam condensate to return to the central heating system. A control will have to be installed on this coil to prevent freezing.

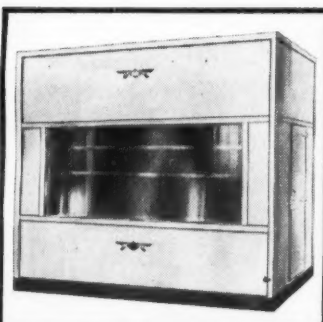
First of all, the fresh air intake should be equipped with a damper so that when the conditioner is shut off the damper is shut tight. Secondly, the motor-operated steam valve should be so connected that when this damper is open and the outdoor temperature is below 32° a constant steam supply is provided to the coil.

Above 32° the discharge temperature controller will regulate the

(Concluded on Page 19, Column 3)

## THE BUYER'S GUIDE

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## SHERER

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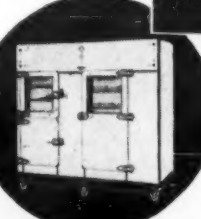
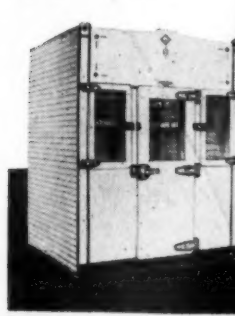
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Philadelphia, Pa.



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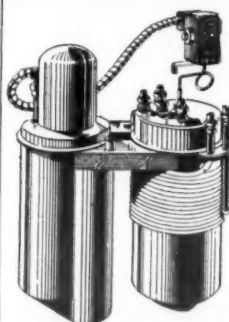
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## Practical Installation Articles for the Air-Conditioning Distributor-Contractor

This series of articles on "How to Select and Install Air Conditioning Systems" by T. H. Mabley, chief engineer of Mechanical Heat & Cold, Inc., Detroit air-conditioning distributor, is written for the use of the air-conditioning distributor and contractor in solving problems of equipment design and installation. As such it should be particularly valuable to new distributors in meeting field problems.

Each study includes an illustration of the method of making the installation, and in some cases, tables to be used in figuring the load requirements or some other factor for the specific job.

In some instalments Mr. Mabley goes into considerable detail in explaining how the heat load calculations are actually figured, how the duct areas are estimated, how refrigerant lines are sized, etc.

Compilation of Mr. Mabley's articles into a pamphlet for ready use by an air-conditioning contractor or dealer is being started by the News. Announcement will be made in the News as soon as these pamphlets are ready for distribution.

The case studies which have appeared in AIR CONDITIONING AND REFRIGERATION NEWS are:

Case No. 1, A Single Office (Jan. 6);

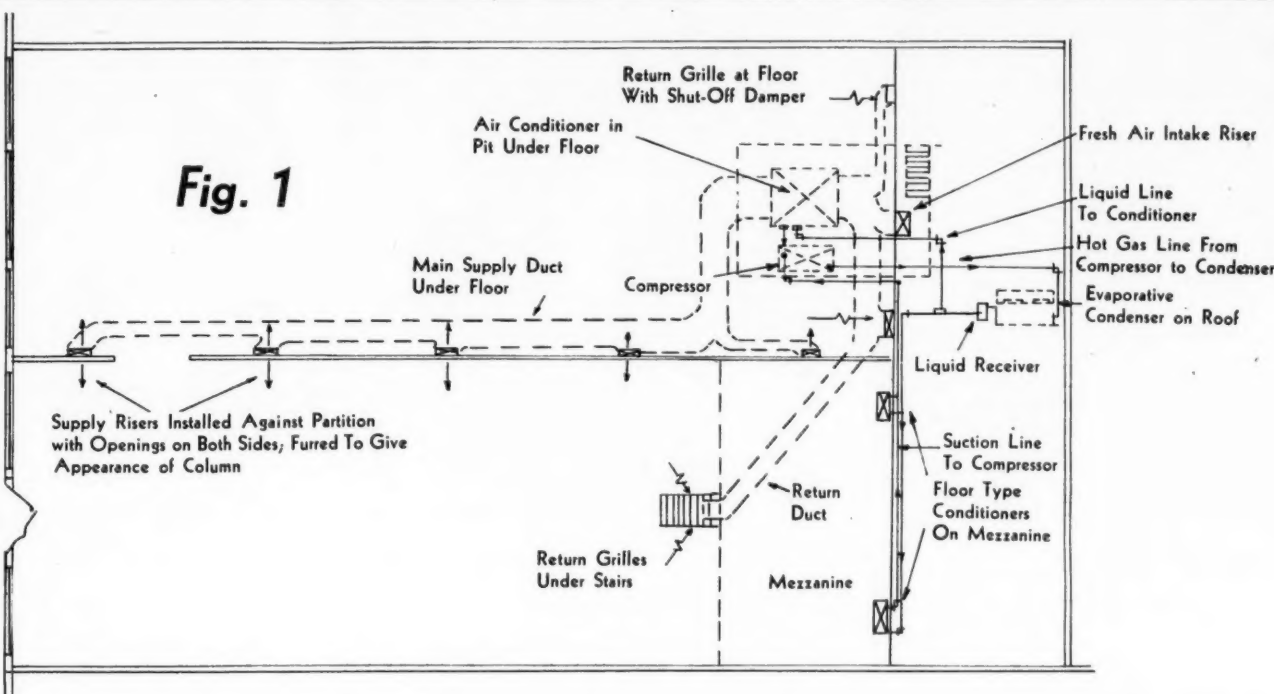
No. 2, A Conference Room (Jan. 13); No. 3, Residence System with Room Cabinets (Jan. 20); No. 4, Typical Commercial Application — A Shoe Store (Feb. 3).

Case No. 5, A Beauty Parlor (Feb. 24); No. 6, A Small Coffee Shop (March 3); No. 7, A Process Job (March 10); No. 8, A Doctor's Office Suite (March 17); No. 9, Central System for a Group of Offices (March 31).

Case No. 10, Partial System for a Residence (April 7); No. 11, Upper Floor of a Residence (April 14); No. 12, A Men's Apparel Store (April 21); No. 13, A Women's Dress Shop (April 28); No. 14, Dual System in a Restaurant and Cocktail Bar (May 5).

Case No. 15, Complete System for a Residence (May 12); No. 16, An Auditorium or Small Theater (May 19); No. 17, Single Floor in a Wing of a Factory (May 26); No. 18, Basement of a Store (June 2); No. 19, A Group of Offices, including one large office and several private offices (June 9).

Case No. 20, A Haberdashery (June 23); Case No. 21, Indirect System for a Suite of Offices (June 30); Case No. 22, Indirect System in a Store (July 7); Case No. 23, Combination Water and Direct Expansion Job for a Top Floor of a Department Store (July 14).



### How Evaporative Condenser Is Installed for a Restaurant Job

(Concluded from Page 18, Column 5)

operation of the steam supply valve when the conditioner is operating. The other control will consist merely of a thermostat located in the main portion of the dining room which will control the operation of the refrigeration compressor.

The outside temperature control will operate the fresh air intake damper so that some cooling by ventilation may be accomplished when the outside temperature is slightly lower than the desired room temperature.

Manual damper controls located at the base of each riser will permit the owner to shut off the air supply to either portion of the conditioned space.

#### SIMPLE DUCT SYSTEM

The duct distribution system is rather simple in design and consists in general of a main trunk installed below the floor joists and in the unexcavated space between the floor and the ground. Some slight excavation will be required to give clearance for working, but this will consist merely of pushing some of the dirt to one side to permit enough space around the ducts for installation.

The risers that come up through the floor and to the ceiling in one half of the dining room will have to be furred in to give the appearance of columns. These risers will be built of a rectangular section of duct with a partition down the center to give the effect of two risers.

Manual dampers will be installed at the bottom of each of these risers to regulate the flow of air to either or both of the sections of the duct. These should be splitter-type dampers.

Special feature of this installation is the evaporative condenser. This piece of equipment consists primarily of a finned coil similar in construction to direct expansion coils, a spray chamber, water-circulating pump, blower, motor, and cabinet housing.

#### REPLACES WATER-COOLED UNIT

This unit replaces the water-cooled condenser used on most of the present-day medium-sized compressor installations. It is similar in operation to an air-cooled condenser with the addition of the water sprays to give the additional heat removal effect with the evaporation of water from the coils.

The unit is usually a complete assembly and looks similar to an air conditioner as it has many of the fundamental parts of a conditioner but functions in the reverse manner. The evaporative condenser removes heat from the refrigerant while the conditioner adds heat to it.

The refrigerant piping to the condenser is shown in Fig. 1 and is merely the same as the piping layout that would be used on any compressor-condenser hookup.

The hot gas line from the compressor goes to the condenser located on the roof in this case and the condensed liquid leaves the condenser and goes either into a liquid receiver or directly to the conditioners. From the evaporators in the conditioners the gas returns to the compressors. A liquid receiver is always used

in the system, always provide a means of pumping down the system into this receiver for winter shut off or for servicing purposes.

In the future it may be expected that the evaporative condensers may be used more often on systems

particularly where water supply for a water-cooled condenser is inadequate or costly. Only from 5 to 10% of the water quantity normally required for a standard water-cooled unit will be required for the evaporative condenser make-up water supply.

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